FIELD MANUAL
No. 44-80

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*This publication supersedes FM 44-80, 20 July 1993.

Cover
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FM 44-80 VISUAL AIRCRAFT RECOGNITION

PREFACE

This manual is primarily a ready reference to assist the ground observer in aircraft recognition and identification. It provides information on current operational aircraft of the United States and foreign countries, which may be observed worldwide in the combat area. It can be used as source material for personnel conducting unit training in visual aircraft recognition.

The procedures in this publication apply throughout the US Army. The data is based on the best information available at the time of publication; however, it is not all-inclusive because of some classification guidelines. This publication, by nature, has a built-in time lag, and some aircraft may still be under development or classified at the time of writing, but may be fielded or unclassified at, or after, publication.

The provisions of this publication are the subject of international agreement QSTAG, 699, Aircraft Recognition Training.

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Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

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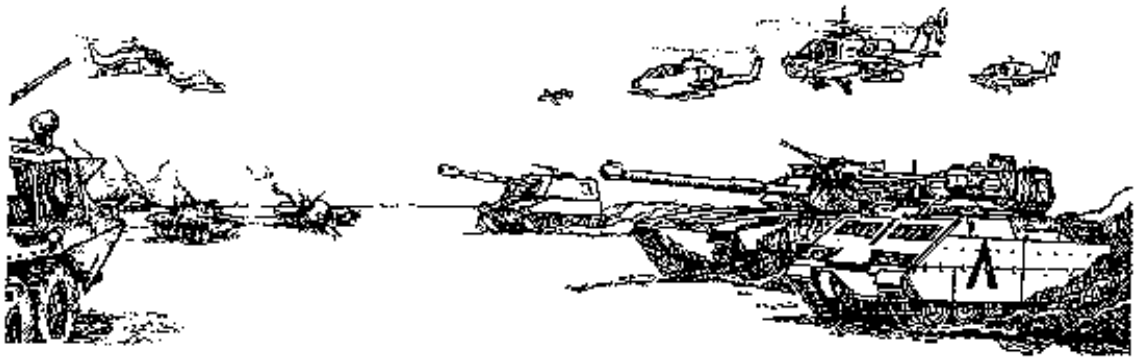


CHAPTER 1

Need for Visual Aircraft Recognition

This chapter provides the causes for the decline in recognition skills in the past, the reasons for visual aircraft recognition today, and an overview of the potential threat. Aircraft are as much a part of the battlefield as tanks and artillery. These aircraft add a vertical dimension and their presence must be accepted and dealt with by every soldier in the field.

On today's battlefield, a soldier must recognize and identify both threat and friendly aircraft. Since there may be many of each type, aircraft recognition training is necessary for every soldier in the combat force.

REASONS FOR VISUAL AIRCRAFT RECOGNITION

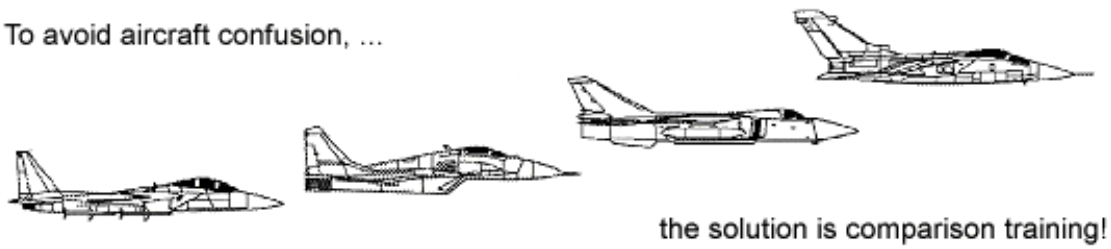
Following World War II, the emphasis on visual aircraft recognition declined as a required skill for ground-based weapons crew members. Causes of the decline were—

• The substitution of guided missiles for large antiaircraft guns.
• The assumption that US forces would continue to maintain air superiority.
• The reliance on electronic equipment for aircraft identification as hostile or friendly.

The need for visual aircraft recognition skills has become more critical since—

• An analysis of past military actions shows aircraft losses to air defense guns and small arms. It has reestablished that the soldier on the ground is capable of inflicting heavy losses on aircraft operating at low altitudes.
• Continued air superiority over every battlefield is not possible.
• Electronic identification has limitations and small units or individual soldiers do not always have access to these devices.
• Visual recognition and identification of specific aircraft types and timely reporting provide the S2 and G2 additional information of a passive nature in the form of early warning, threat air capability, or information on a possible new tactical situation such as supply drops, defoliation, or photographic reconnaissance.

The provision of large numbers of AD weapon systems to all divisional and some nondivisional ground combat forces generates additional emphasis on the need for visual aircraft recognition. Crew and team members of these weapon systems depend on visual recognition and identification of aircraft when making engagement decisions. The effectiveness of



CHAPTER 2

Factors That Affect Detection, Recognition, and Identification

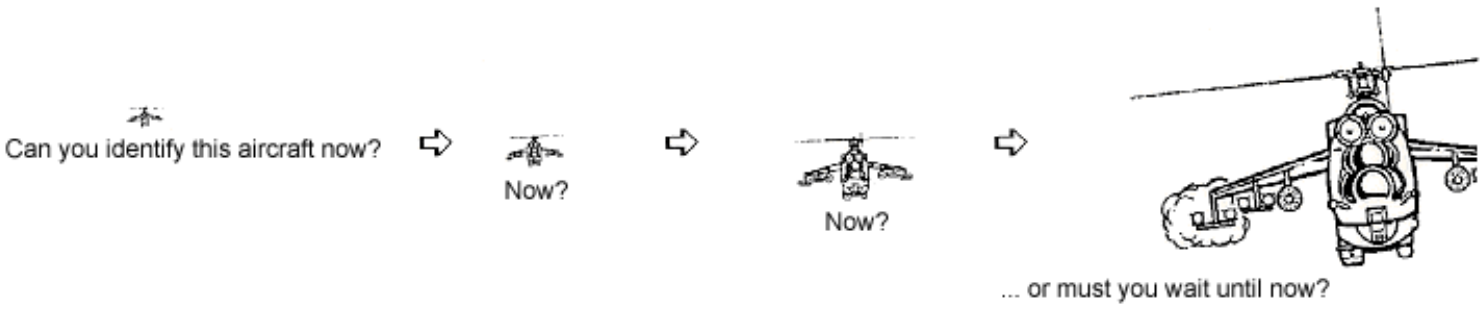
This chapter covers early recognition and identification, aircraft confusion, physical factors, and search techniques. It also covers markings and camouflage, the use of binoculars, and other recognition considerations.

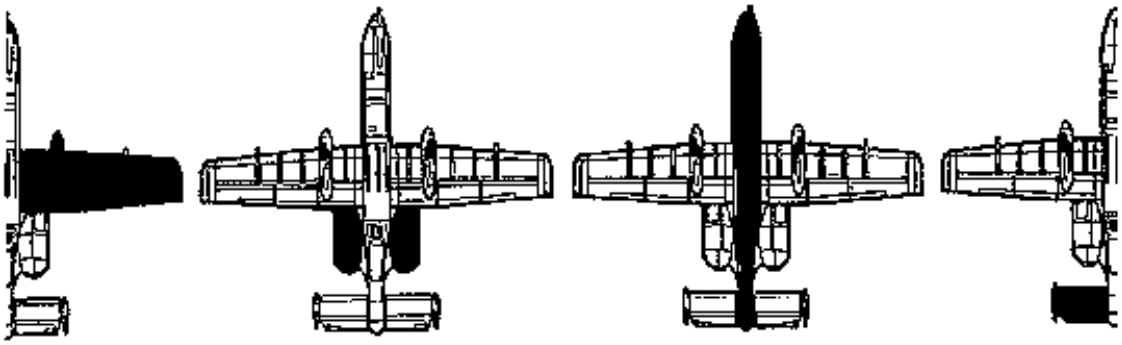
Every attempt made at visual aircraft recognition involves two events. First, an aircraft must be detected. Second, the aircraft must be inspected to distinguish the characteristics or shape that makes it recognizable as a particular aircraft.

Since detection, identification, and recognition are all visual processes, an aircraft must be detected, and then recognized at the farthest range possible, to make a timely engagement decision and or to report the aircraft. The task requires good, corrected if necessary, eyesight.

EARLY AIRCRAFT RECOGNITION AND IDENTIFICATION

The farther out an aircraft can be detected, recognized, and identified, the more time a gunner has to make an engagement decision. If the gunner is not going to engage the aircraft, then early recognition and identification will allow time to seek cover and or report the aircraft. The importance of early identification is demonstrated in the following illustration.





CHAPTER 3

Description of Aircraft

This chapter shows the features of aircraft that make recognition and identification possible, and sorts out similar and dissimilar aircraft. Additionally, it shows examples of how aircraft are named and or numbered.

All of the possible aircraft configurations are not covered in this chapter. When instructing aircraft recognition, an instructor or small unit leader can follow the descriptive methods used in the examples and derive his own descriptions for features or configurations that are not covered in the text.

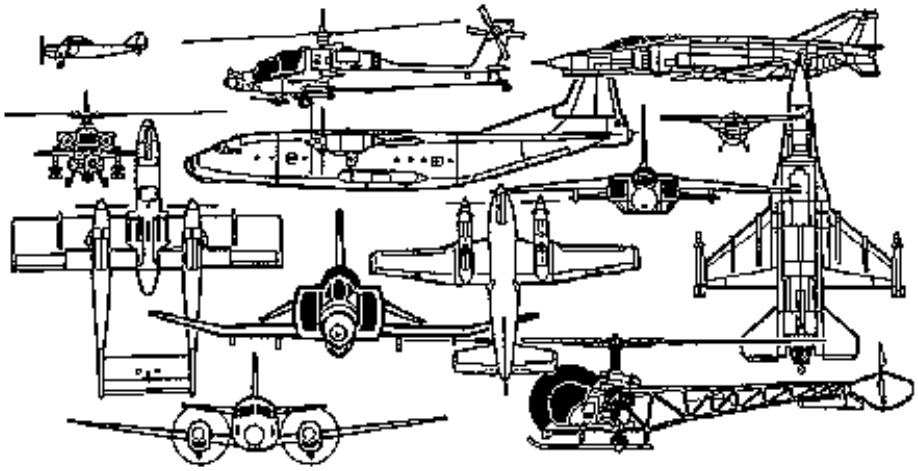
AIRCRAFT RECOGNITION AND IDENTIFICATION FEATURES

All aircraft are built with the same basic elements: wings to provide lift, engine(s) to provide motive power, a fuselage to carry the payload and controls, and a tail assembly which usually controls the direction of flight. These elements differ in shape, size, number, and position. The differences distinguish one aircraft type from another. An instructor can isolate the individual components for description and study as separate recognition and identification features, but it is the composite of these features that must be learned to recognize and identify an aircraft. The WEFT Features illustration shows **wings**, **engine(s)**, **fuselage**, and **tail** features of aircraft. Allied countries may teach more or fewer features of aircraft in their recognition and identification programs.

WEFT FEATURES

WINGS	ENGINES	FUSELAGE	TAIL
Type	Type	Shape	Location
Position	Number	Nose	Slant
Slant	Location	Mid	Number
Shape	Intakes	Rear	Shape
Taper	Exhausts	Cockpit	
		Special	

-



CHAPTER 4

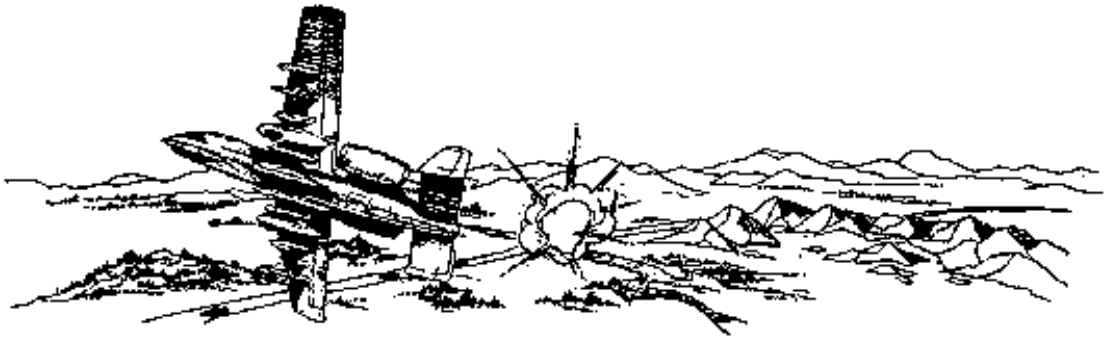
Instruction Program

This chapter describes training methods and the fundamentals of VACR. In addition, the chapter features training aids and slide kit training which are used to develop and implement aircraft recognition training.

All soldiers are required to recognize a selected number of threat and friendly aircraft for survival and intelligence gathering. When the mission is to defend the airspace above the battlefield to protect friendly assets, the ability to recognize and identify aircraft becomes even more important. These skills make it possible to discriminate between friendly and hostile aircraft by name and or number and type which will help avoid destruction of friendly aircraft, and at the same time, recognize, identify, and engage hostile aircraft.

TRAINING PROGRAM

Aircraft recognition and identification proficiency skills are gained through training. The training functions of plan, prepare, present, practice, and perform are the same in VACR training as for other classroom subjects. The skill level to which the unit will train depends on the unit’s mission. A VACR training program should be based on established training methods, clearly defined individual skill levels that must be met, and the fundamentals of VACR.



CHAPTER 5

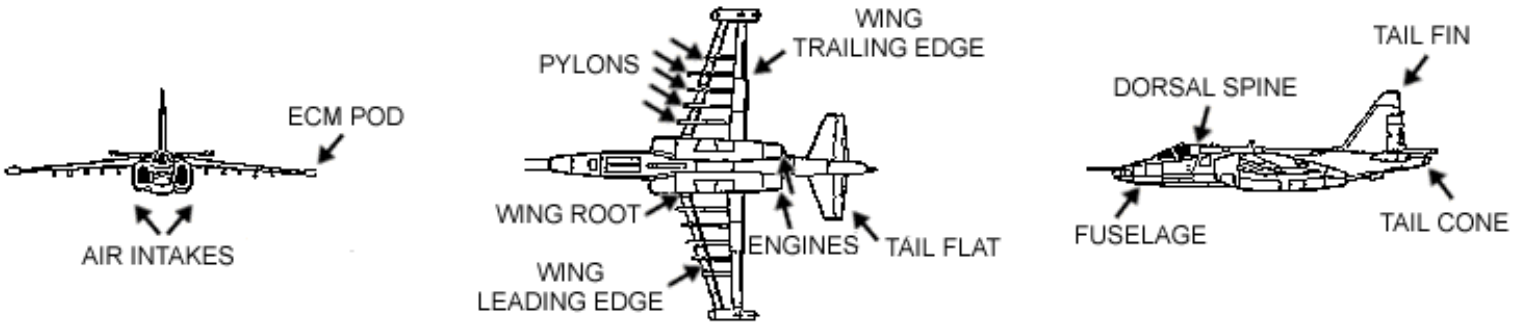
Ground-Attack, Close Air Support, and Fighter-Bomber Aircraft

In this chapter, there are examples of both hostile and friendly ground-attack, CAS, and fighter-bomber aircraft. These aircraft will perform a variety of missions to include reconnaissance and interdiction in the forward areas.

Most aircraft shown can and will perform several roles. For example, the F/A-18 Hornet and MiG-21 Fishbed are used in many roles, depending on the model and type of the aircraft. For the most part, all the aircraft depicted here will be seen performing missions over the modern battlefield.

For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. Line drawings are not to scale. The following illustration shows general-attack, CAS, and fighter-bomber aircraft WEFT description features.

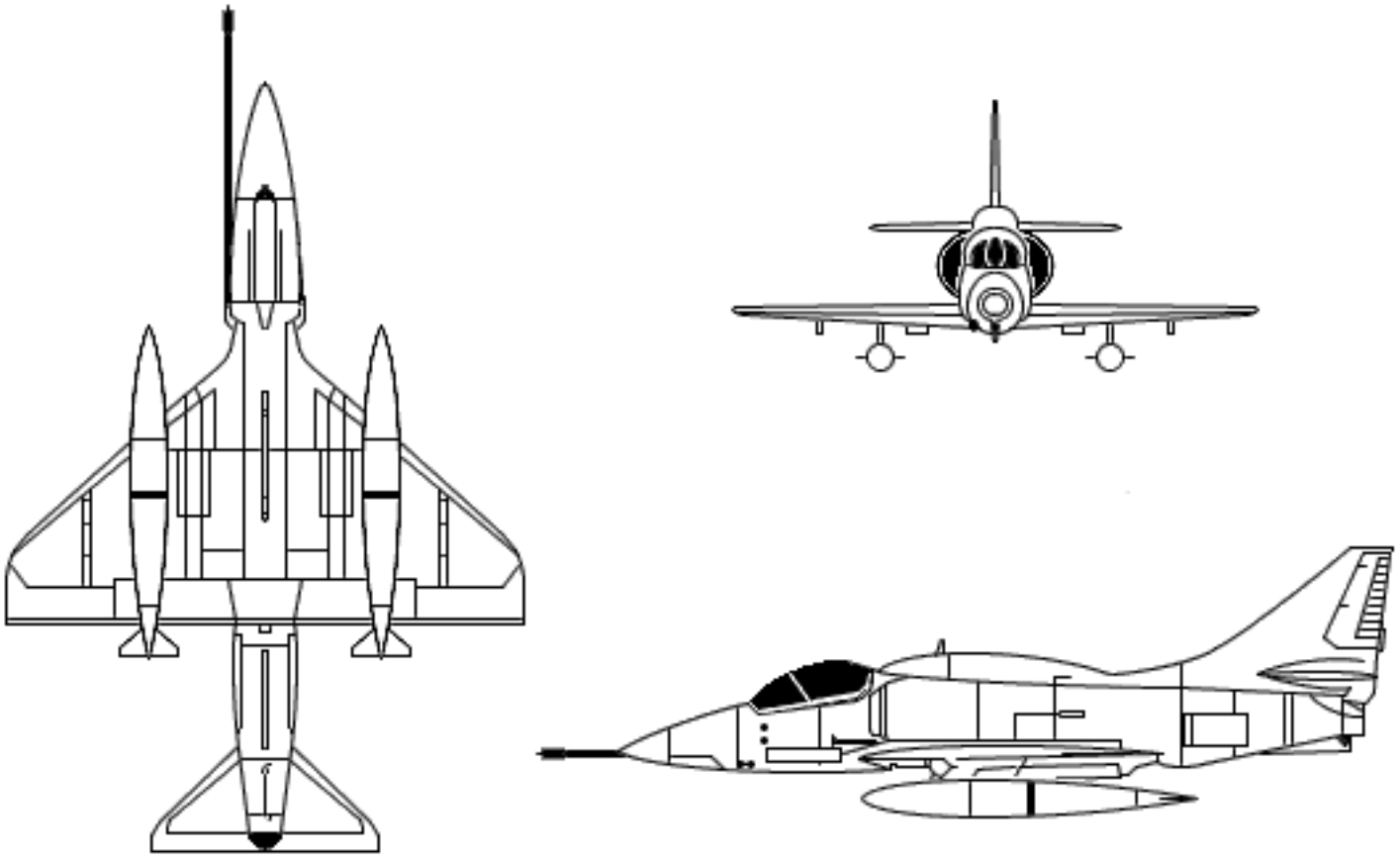
WEFT DESCRIPTION FEATURES



Chapter 5 Aircraft List

A-4 Skyhawk	F-104 Starfighter	MiG-27 Flogger D,J
A-6 Intruder	F-111 Aardvark	MiG-29 Fulcrum
A-7 Corsair II	F-117A Night Hawk	Mirage III/5
A-10A Thunderbolt II	Fantan A, Q-5	Mirage F1
A-37 Dragonfly	G.91Y	SF.260W
Alpha Jet	Galeb/Jastreb	Su-7B Fitter A
AMX	Hawk	Su-17,-20,-22 Fitter
AV-8B Harrier II	Jaguar	Su-24 Fencer
Buccaneer	Kfir	Su-25 Frogfoot
Draken	L-39 Albatross	Super Etendard
F-1	Magister CM.170	Tornado IDS
F-4 Phantom II	M.B. 326	Viggen AJ-37
F-5 Freedom Fighter/Tiger II	M.B. 339A	Yak-28 Brewer
F-16 Fighting Falcon	MiG-17 Fresco	Yak-38 Forger
F/A-18 Hornet	MiG-21 Fishbed	.

A-4 SKYHAWK (McDONNELL DOUGLAS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Hawk, Mirage III/5, Yak-38 Forger, F-4 Phantom II.
Crew. One; Trainer--two.
Role. Attack, CAS.
Armament. Bombs, rockets, missiles, gun pods, two cannons.
Dimensions. Length: 40 ft, 3 in (12.28 m). Span: 27 ft, 6 in (8.38 m).

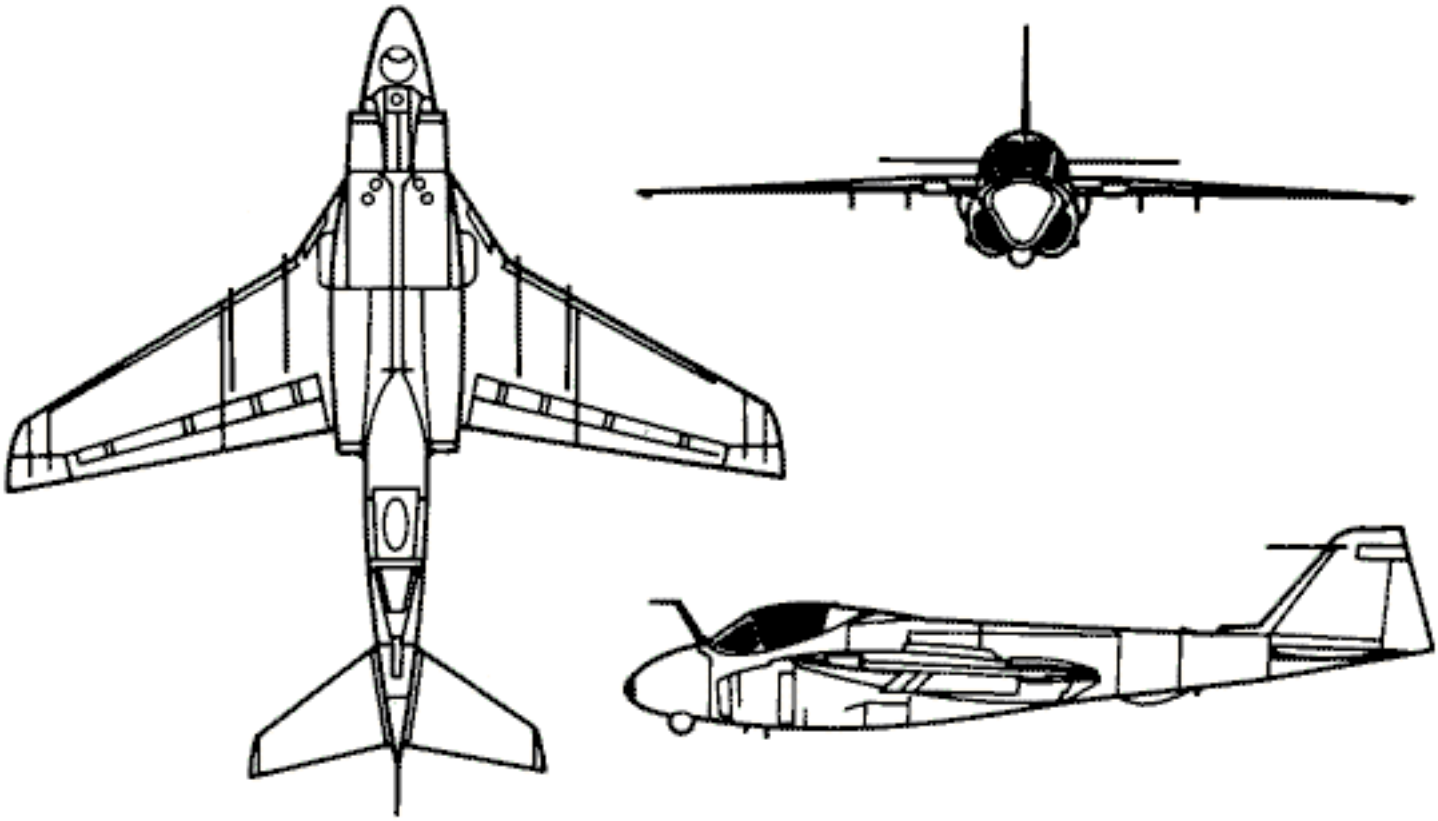
WEFT DESCRIPTION

Wings. Low-mounted delta with curved tips.
Engine(s). Single turbojet inside body. Air intakes semicircular and mounted on the body above and forward of the wings' leading edges.
Fuselage. Barrel-shaped with solid, pointed nose. Humped dorsal spine. Body widens at air intakes and tapers to the rear. Bubble canopy. Some versions have an extended nose.
Tail. Delta-shaped tail flats mounted low on a swept-back, tapered tail fin with a square tip.

USER COUNTRIES

Argentina, Indonesia, Israel, Kuwait, Malaysia, New Zealand, Singapore, USA.

A-6 INTRUDER (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Hunter.
Crew. Two.
Role. US Marine Corps all-weather attack bomber, tanker.
Armament. Bombs, missiles.
Dimensions. Length: 54 ft, 7 in (16.64 m). Span: 53 ft (16.15 m).

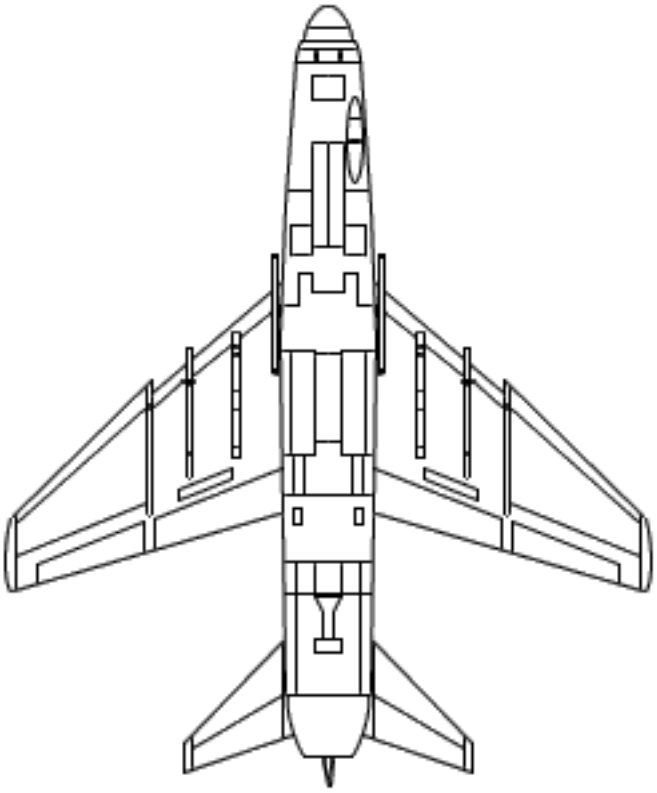
WEFT DESCRIPTION

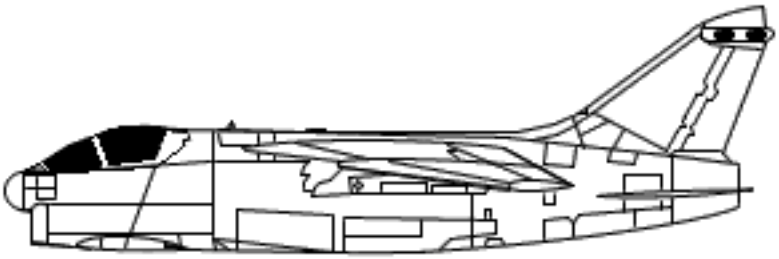
Wings. Mid-mounted, swept-back, and tapered with blunt tips.
Engine(s). Two turbojets mounted on body midsection. Semicircular air intakes below and forward of the wing roots. Exhausts are in the trailing edges of the wing roots.
Fuselage. Teardrop-shaped with a rounded nose. Body tapers to the rear section. Bubble canopy.
Tail. Unequally tapered tail fin with a square tip and small, stepped fairing in the leading edge. Swept-back, tapered tail flats, high-mounted on the fuselage with blunt tips.

USER COUNTRY

USA

A-7 CORSAIR II (VOUGHT)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-16 Fighting Falcon, G-91Y, Su-17 Fitter.
Crew. One; TA-7H and A-7K--two.
Role. Attack, CAS.
Armament. Bombs, rockets, missiles, cannon, gun pods.
Dimensions. Length: 46 ft (14.06 m). Span: 38 ft, 8 in (11.8 m).

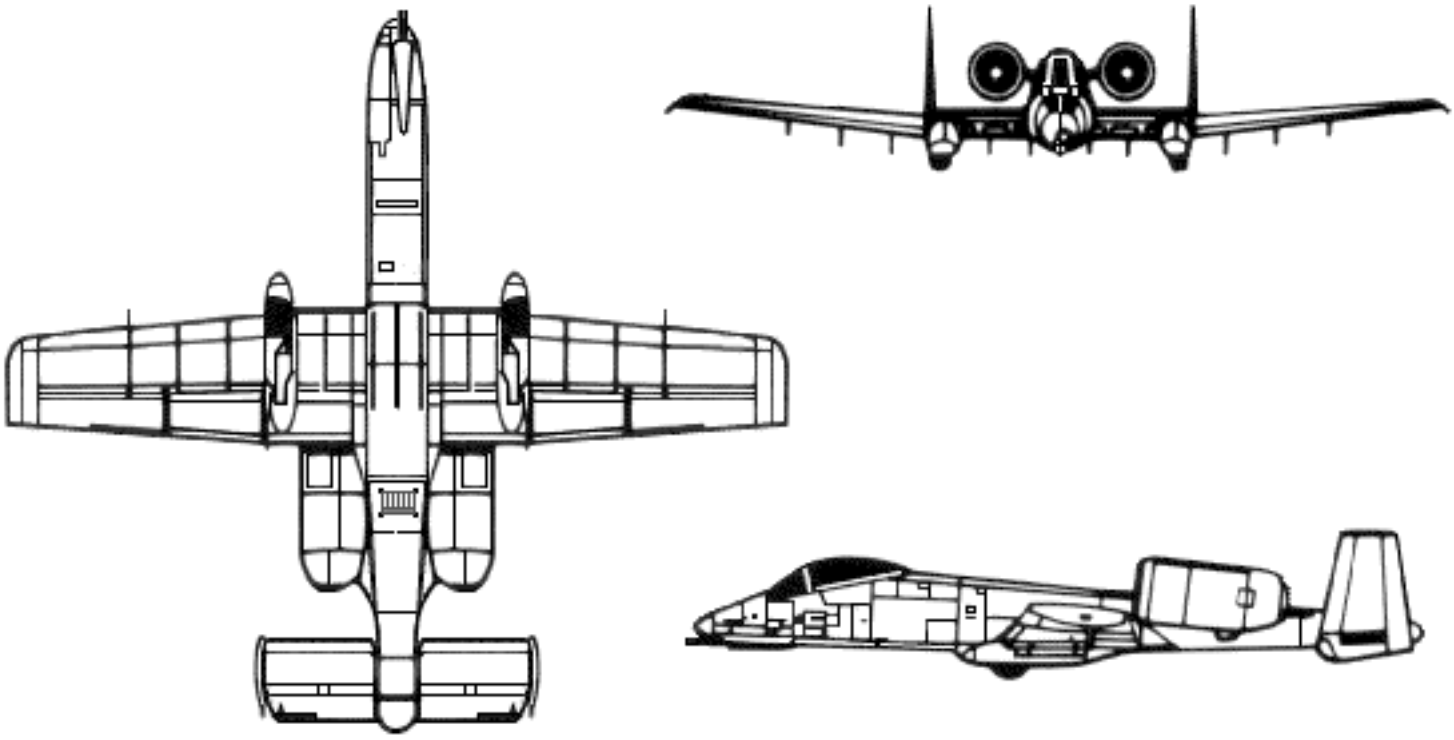
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with blunt tips and a negative slant. Sawtooth in the leading edges on some models.
Engine(s). One turbofan inside the body; oval air intake under a round nose. Single exhaust.
Fuselage. Wide, thick body with rounded nose and blunt tail section. Bubble canopy is located well forward on the nose.
Tail. Flats mid-mounted on the body, swept-back and tapered, with a positive slant. The fin is swept-back with a curved tip.

USER COUNTRIES

Greece, Portugal, USA.

A-10A THUNDERBOLT II (FAIRCHILD REPUBLIC)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. None, but compare with the Su-25 Frogfoot.
Crew. One.
Role. CAS, ground attack.
Armament. 30-mm cannon, bombs, rockets, Hellfire missiles, gun pods.
Dimensions. Length: 53 ft, 4 in (16.27 m). Span: 57 ft, 6 in (17.54 m).

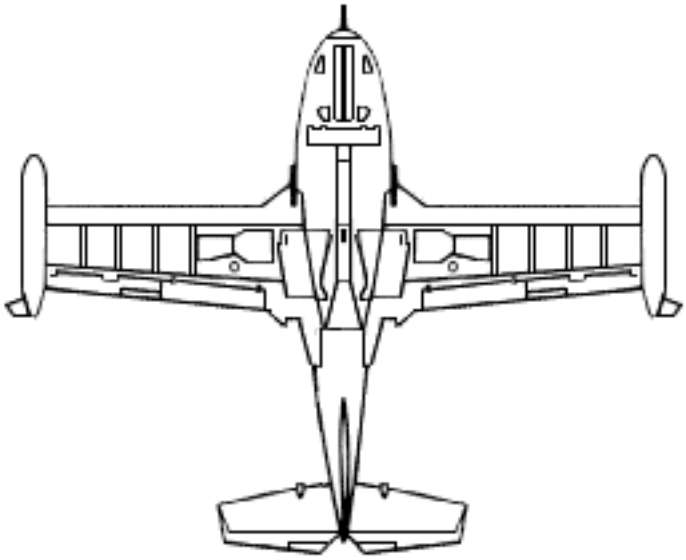
WEFT DESCRIPTION

Wings. Low-mounted on the fuselage, untapered to the wheel pods, and equally tapered from the wheel pods to the blunt, curled under tips. Landing gear pods are under the wings.
Engine(s). Two turbofan engines in pods, mounted high on the rear of the body between the wings and the tail section.
Fuselage. Rounded nose, tapered rear, bubble canopy. Protrusion in the left side of the nose section is the 30-mm GAU-8 cannon.
Tail. Two tail fins on the tips of a rectangular tail flat; unequally tapered fins extend above and below the tail flat. Flat is low-mounted on a sharply tapered rear fuselage.

USER COUNTRY

USA.

A-37 DRAGONFLY (CESSNA)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Galeb-Jastreb, M.B.326, M.B.339, Hawk.
Crew. Two.
Role. Light-attack, forward air control, reconnaissance, observation.
Armament. Bombs, rockets, gun pods, minigun.
Dimensions. Length: 29 ft, 3 in (8.94 m). Span: 33 ft, 9 in (10.32 m).

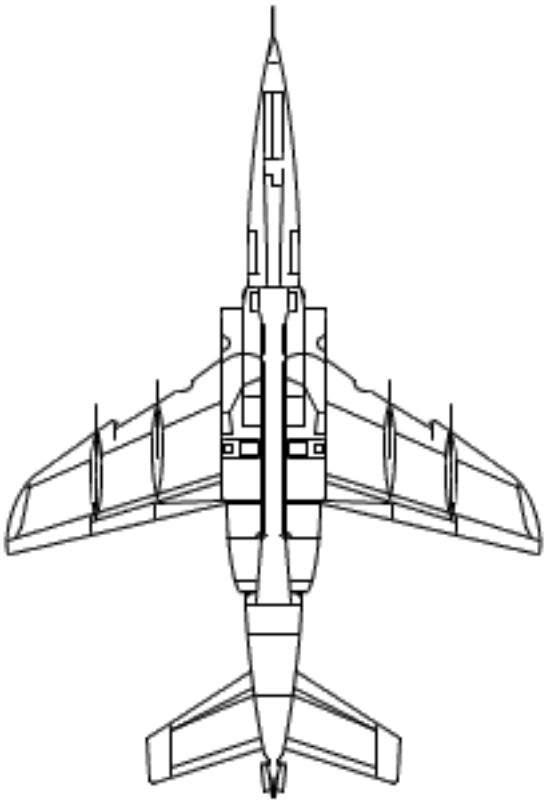
WEFT DESCRIPTION

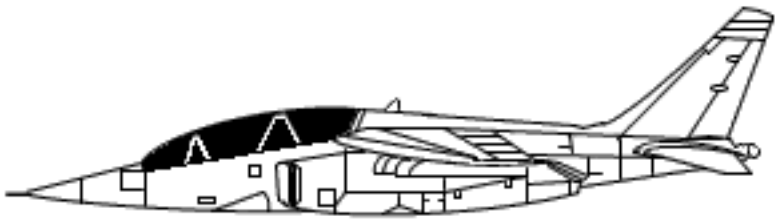
Wings. Mid-mounted, straight leading edge, and slight forward taper in the trailing edge with square tips (generally fuel tanks).
Engine(s). Two turbojets mounted internally. Small semicircular air intakes and round exhausts are located in the wing roots.
Fuselage. Flattened, oval front section tapered to the rear. Bubble canopy.
Tail. Flats mid- to low-mounted on the fin, equally tapered with blunt tips. Fin is tapered with a blunt tip and a small fairing in the leading edge.

USER COUNTRIES

Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Panama, Peru, South Korea, Thailand, Uruguay, USA, Vietnam.

ALPHA JET (DASSAULT-BREGUET, DORNIER)





GENERAL DATA

Countries of Origin. France, Germany.
Similar Aircraft. Hawk, AMX, Mirage F1, AV-8B Harrier II.
Crew. Two.
Role. Light-attack, advanced trainer.
Armament. Gun pods, bombs, rockets, missiles.
Dimensions. Length: 40 ft, 3 in (12.3 m). Span: 30 ft (9.14 m).

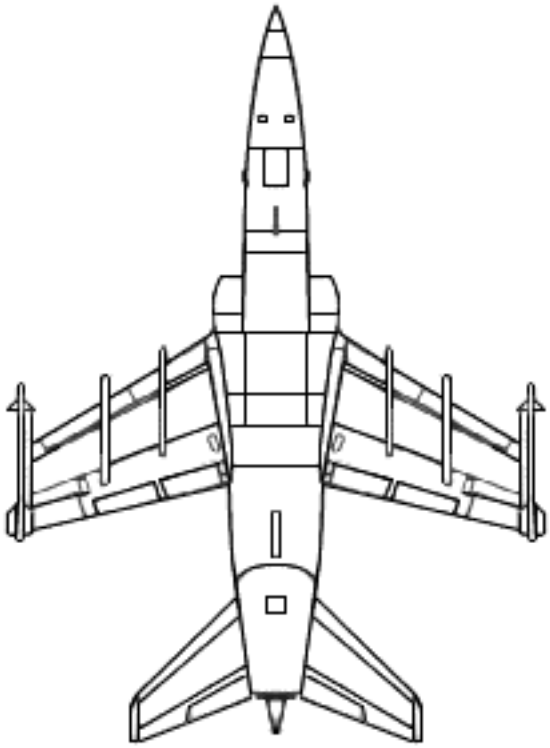
WEFT DESCRIPTION

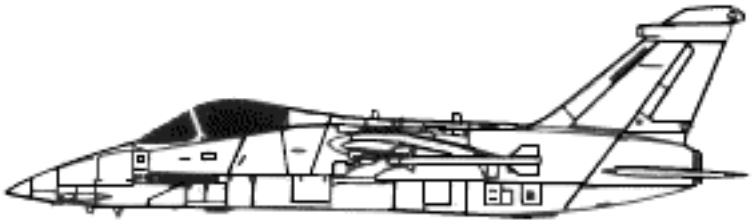
Wings. High-mounted, swept-back, and tapered with curved tips and negative slant.
Engine(s). Two alongside the body under the wings. Oval-shaped air intakes forward of the wings' leading edges. Exhausts are at the rear of the wings' trailing edges.
Fuselage. Slender, pointed nose and tail. Two-seat cockpit with a bubble canopy.
Tail. Swept-back and tapered tail fin with a clipped tip. Swept-back and tapered tail flats mid-mounted on the body with a negative slant and square tips.

USER COUNTRIES

Belgium, Cameroon, Egypt, France, Germany, Ivory Coast, Morocco, Nigeria, Portugal, Qatar, Togo.

AMX (AERITALIA, AERMACCHI, EMBRAER)





GENERAL DATA

Countries of Origin. Italy, Brazil.
Similar Aircraft. Alpha Jet, Mirage F1, AV-8B Harrier II.
Crew. One.
Role. Light bomber, fighter.
Armament. Bombs, cluster bombs, rockets, AAMs, ASMs.
Dimensions. Length: 44 ft, 6 in (13.58 m). Span: 29 ft (8.84 m).

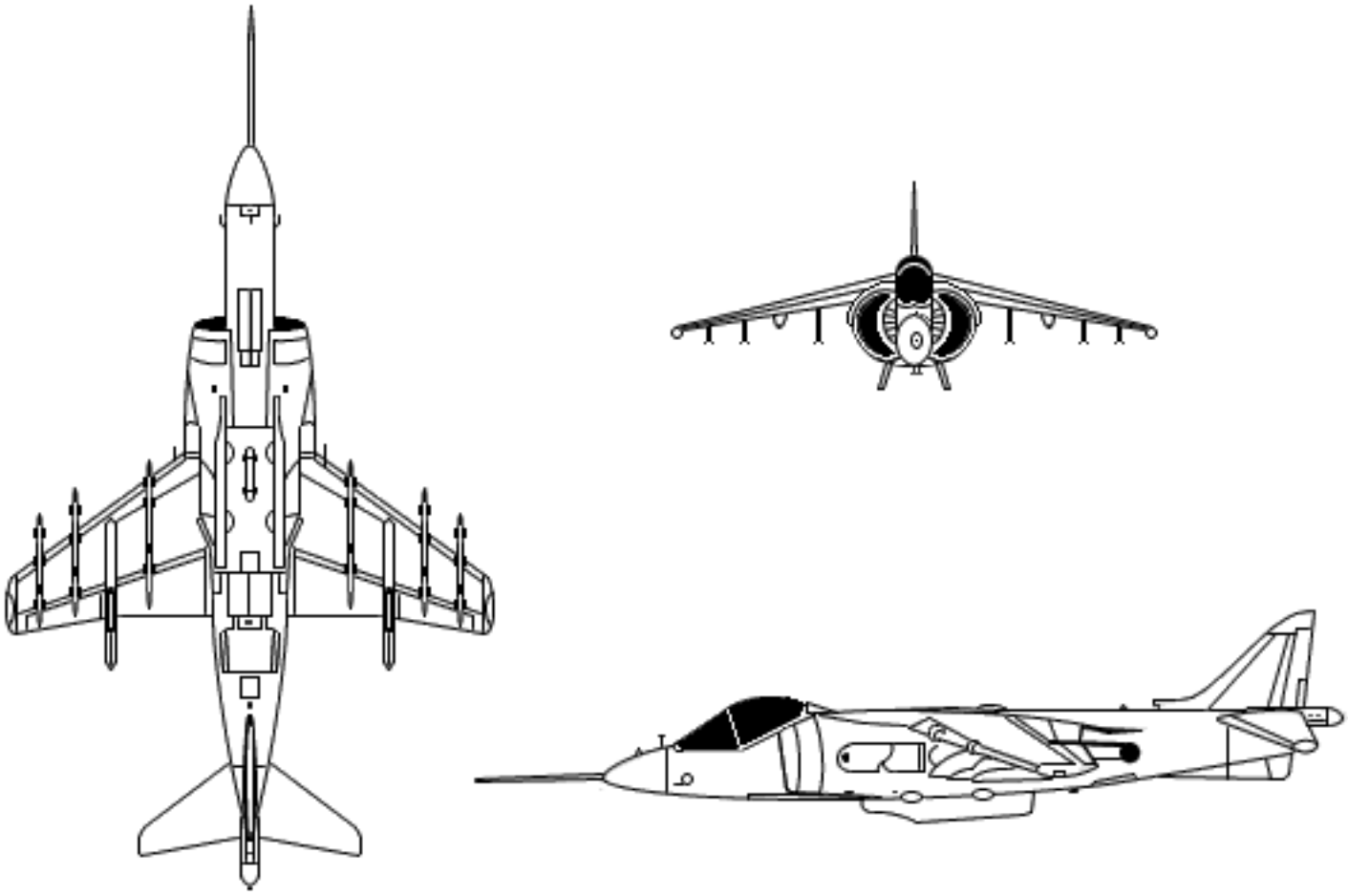
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with square tips (AAMs usually mounted).
Engine(s). One turbofan inside body. Two air intakes forward of the wing roots. Single exhaust.
Fuselage. Pointed nose and bubble canopy. Body widens at the air intakes and tapers to the rear section.
Tail. Flats mid-mounted on fuselage, swept-back, and tapered with blunt tips. Swept-back and tapered fin with a blunt tip.

USER COUNTRIES

Brazil, Italy.

AV-8B HARRIER II (McDONNELL DOUGLAS, BAe)



GENERAL DATA

Countries of Origin. USA, UK.
Similar Aircraft. Yak-38 Forger, Mirage F1, AMX.
Crew. One.
Role. VSTOL fighter, CAS.
Armament. Cannon, missiles, bombs, rockets, gun pods.
Dimensions. Length: 46 ft, 4 in (14.13 m). Span: 30 ft, 4 in (9.25 m).

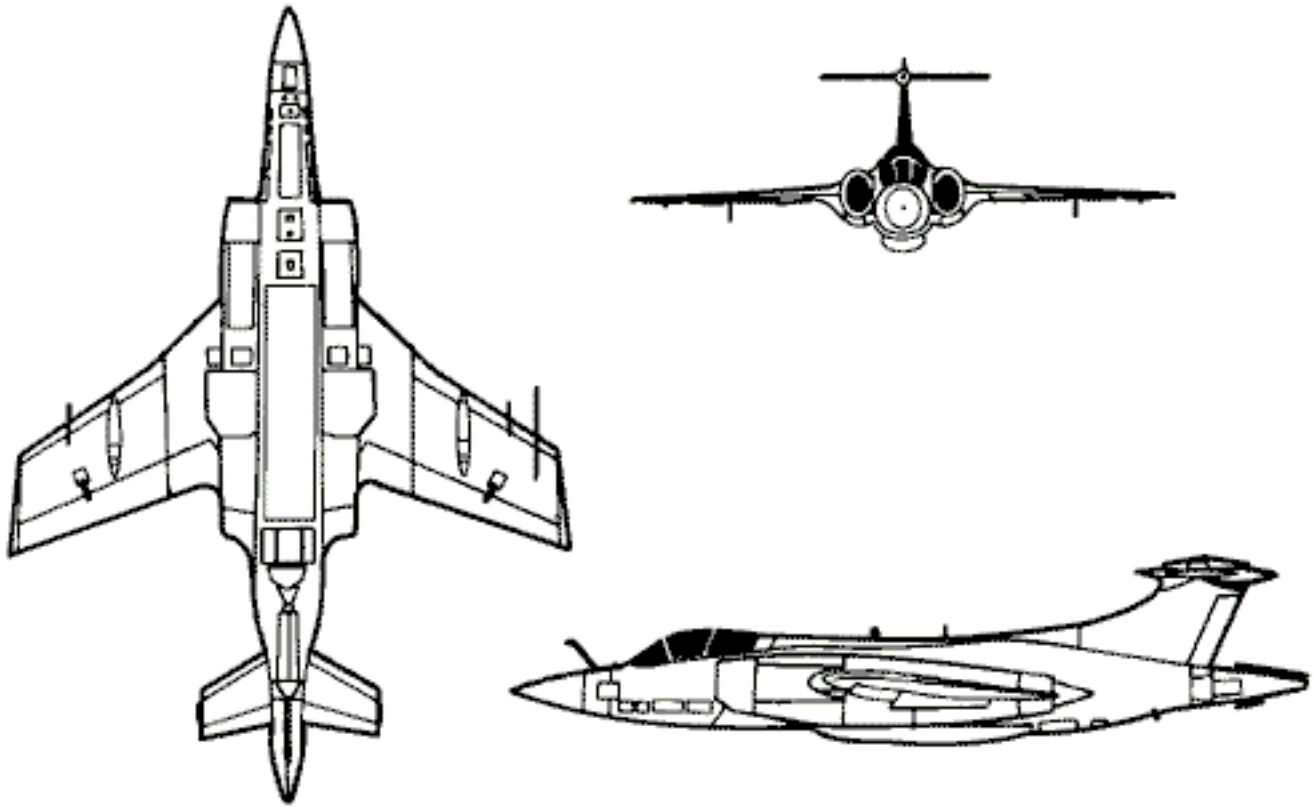
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered, negative slant and blunt tips.
Engine(s). One vectored thrust turbofan mounted in the body. Large, semicircular air intakes that give the body a rounded appearance from the head-on view.
Fuselage. Thick, rounded, and tapering to a slender tail. Pointed nose and bubble canopy.
Tail. Fin swept-back and tapered with curved tip. Small step in the leading edge. Tail flats high-mounted on fuselage are swept-back with a negative slant and blunt tips. Pointed rear tail cone.

USER COUNTRIES

India, Italy, Spain, UK, USA.

BUCCANEER (HAWKER SIDDELEY)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. AV-8 Harrier, F-4 Phantom, Jaguar.
Crew. Two.
Role. Maritime duties, reconnaissance.
Armament. Bombs (internal and under wings), missiles, rockets, gun pods.
Dimensions. Length: 63 ft, 5 in (19.34 m). Span: 44 ft (13.5 m).

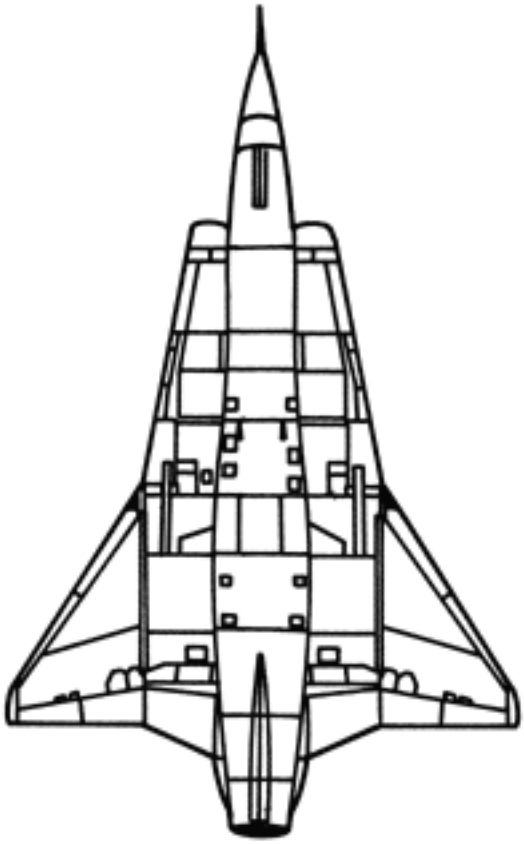
WEFT DESCRIPTION

Wings. Mid-mounted, wide wing roots, swept-back, and tapered with square tips.
Engine(s). Two mounted alongside the fuselage in the wing roots. Circular air intakes below the canopy. Exhausts at rear of the trailing edges of the wings.
Fuselage. Bulging midsection and a pointed nose. Large bubble canopy.
Tail. Flats swept-back and tapered with square tips, high-mounted on a swept-back tail fin forming a T. Tail cone extends beyond the tail.

USER COUNTRIES

South Africa, UK.

DRAKEN (SAAB)



GENERAL DATA

Country of Origin. Sweden.
Similar Aircraft. Hunter.
Crew. One.
Role. Fighter-attack, reconnaissance.
Armament. Bombs, cannon, rockets, missiles.
Dimensions. Length: 50 ft, 4 in (15.5 m). Span: 30 ft, 10 in (9.5 m).

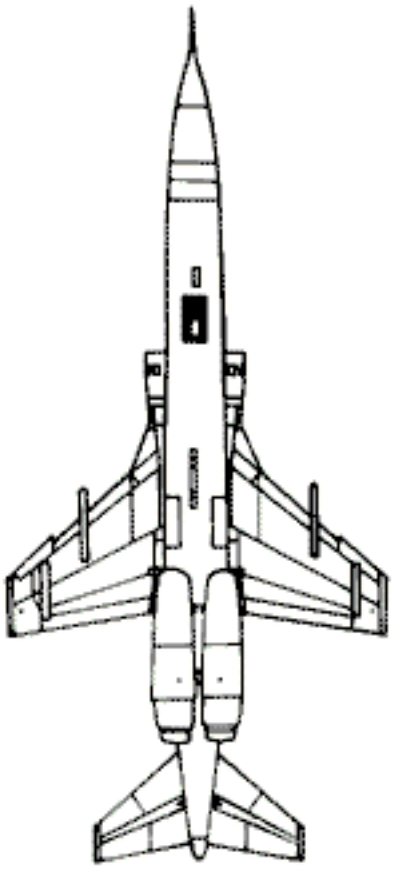
WEFT DESCRIPTION

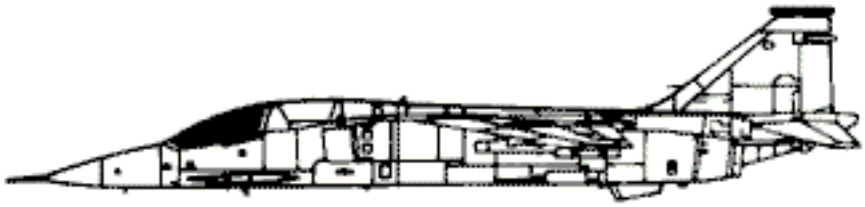
Wings. Mid-mounted, double-delta extending from the canopy to the tail section.
Engine(s). One turbojet located inside the body. Oval air intakes in the leading edges of the wing roots. Large, single exhaust.
Fuselage. Tubular body blending into the delta wings. Long, pointed nose and a bubble canopy mounted forward of the air intakes.
Tail. No tail flat. Large, swept-back, tapered tail fin with square tip mounted on the dorsal spine.

USER COUNTRIES

Austria, Denmark, Finland, Sweden.

F-1 (MITSUBISHI)





GENERAL DATA

Country of Origin. Japan.
Similar Aircraft. Mirage F1, Super Etendard, Yak-38 Forger.
Crew. One; T-2 trainer--two.
Role. CAS, fighter.
Armament. Cannon, bombs, rocket pods, ASMs, AAMs.
Dimensions. Length: 58 ft, 8 in (17.86 m). Span: 26 ft (7.9 m).

WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with square tips. Sawtooth in leading edges. Negative slant.

Engine(s). Two turbofans. Semicircular air intakes well forward of the wing roots, tapering to the rear. Exhausts flare outward at the forward bottom of the overhanging tail section.

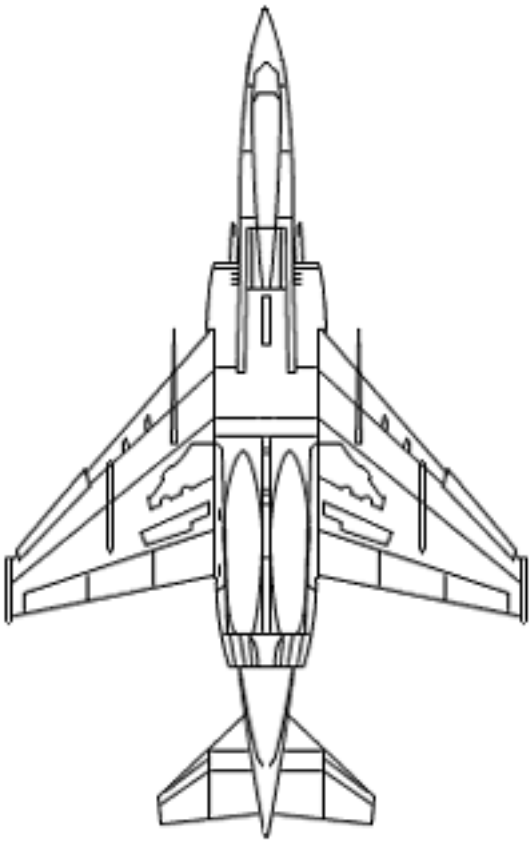
Fuselage. Long, slender with sharply pointed nose. Tapers to the rear. Bubble canopy that blends with a tapered dorsal spine behind the cockpit.

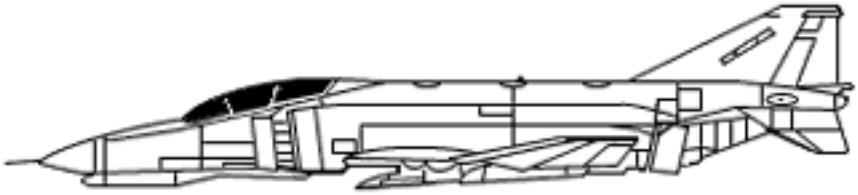
Tail. Back-tapered fin with square tip. Flats high-mounted on the tapered fuselage, swept-back, and tapered with square tips and a negative slant.

USER COUNTRY

Japan.

F-4 PHANTOM II (McDONNELL DOUGLAS)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Jaguar, Buccaneer, A-4 Skyhawk, Super Etendard.
Crew. Two.
Role. Fighter-bomber, CAS, ECM, reconnaissance.
Armament. Cannon, rockets, missiles, bombs.
Dimensions. Length: 63 ft (18.7 m). Span: 38 ft, 5 in (11.77 m).

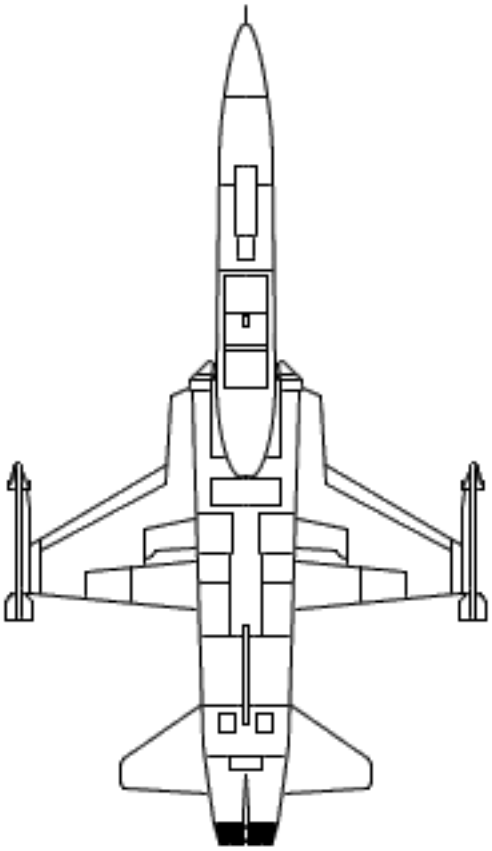
WEFT DESCRIPTION

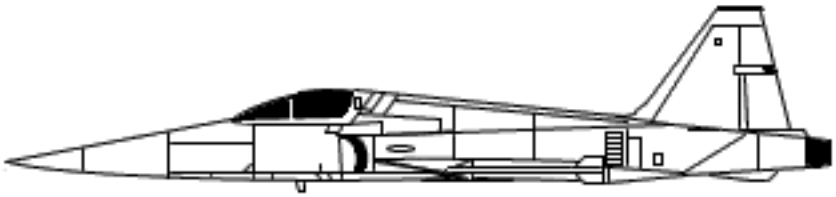
Wings. Low-mounted, swept-back, and semidelta with square tips. Positive slanted wing tips. There is a sawtooth in leading edges of the wings.
Engine(s). Two engines inside the body with rectangular air intakes alongside the body in front of the wings. Twin exhausts beneath a large overhanging rear section.
Fuselage. Rectangular midsection, pointed droopy nose, and a bubble cockpit.
Tail. Flats are mid-mounted on the body, delta-shaped with a negative slant. Sharply back-tapered fin with a square tip.

USER COUNTRIES

Egypt, Germany, Greece, Iran, Israel, Japan, South Korea, Turkey, USA.

F-5 FREEDOM FIGHTER/TIGER II (NORTHROP)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-104 Starfighter, Hawk, M.B.339, Yak-38 Forger.
Crew. One; F-5F and T-38 Talon--two.
Role. Fighter-bomber, CAS.
Armament. Cannons, rockets, bombs.
Dimensions. Length: 48 ft (14.65 m). Span: 26 ft, 8 in (8.14 m).

WEFT DESCRIPTION

Wings. Low-mounted, stubby, and unequally tapered. Missiles or fuel tanks are normally carried on the square tips.

Engine(s). Two engines inside the body, semicircular air intakes forward of the wing roots. Shotgun exhausts.

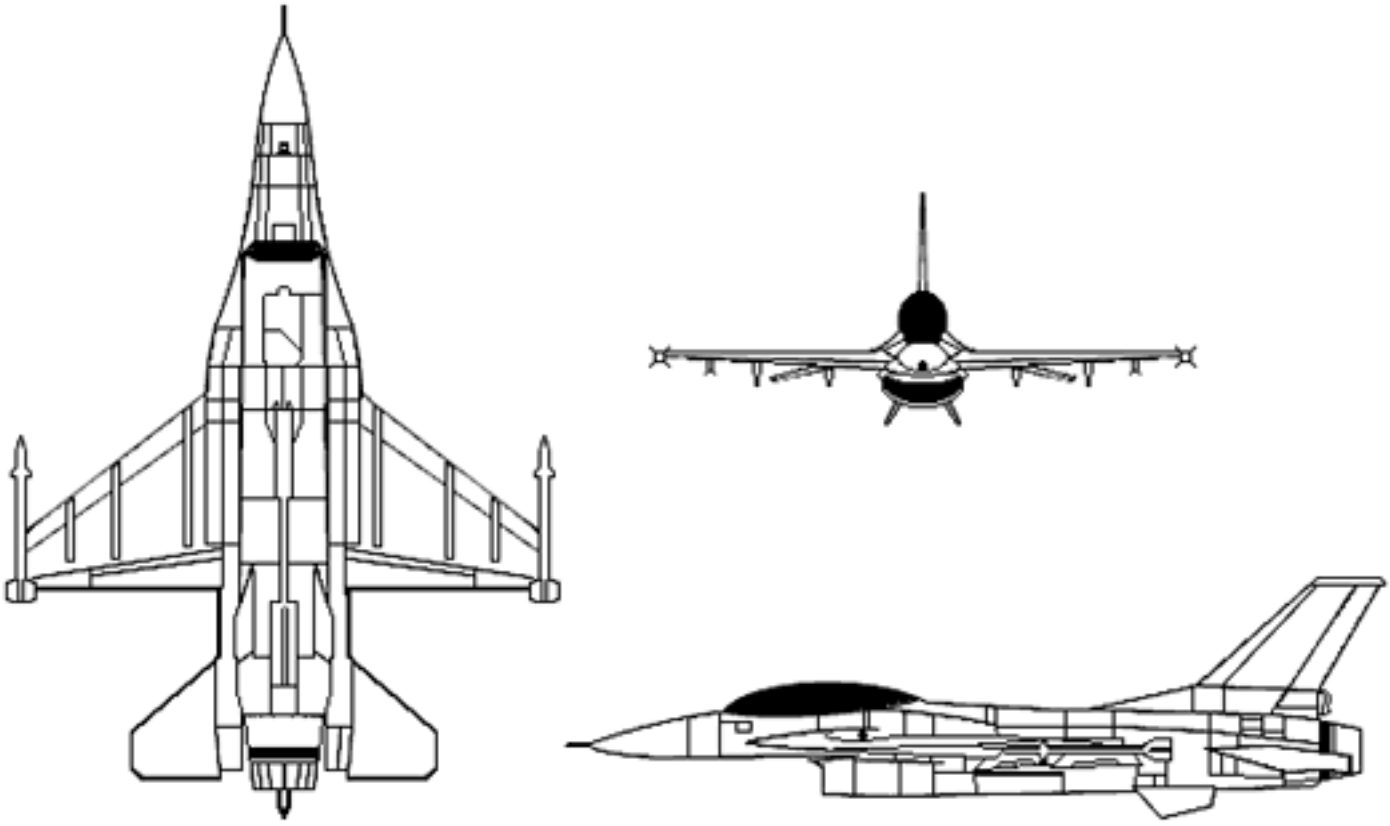
Fuselage. Bullet-shaped, long, drooping pointed nose. Bottom is flat from the air intakes to the dual exhausts. Bubble canopy.

Tail. Flats are low-mounted and unequally tapered. Fin is large and equally tapered with a square tip.

USER COUNTRIES

Bahrain, Brazil, Canada, Chile, Greece, Honduras, Indonesia, Iran, Jordan, Kenya, Malaysia, Mexico, Morocco, North Yemen, Norway, Philippines, Saudi Arabia, Singapore, South Korea, Spain, Sudan, Switzerland, Taiwan, Thailand, Tunisia, Turkey, Venezuela.

F-16 FIGHTING FALCON (GENERAL DYNAMICS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F/A-18 Hornet, MiG-29 Fulcrum, Mirage F1.
Crew. One; F-16B--two.
Role. Multirole ground-attack/fighter.
Armament. Cannon, missiles, bombs.
Dimensions. Length: 47 ft, 8 in (14.54 m). Span: 31 ft (9.46 m).

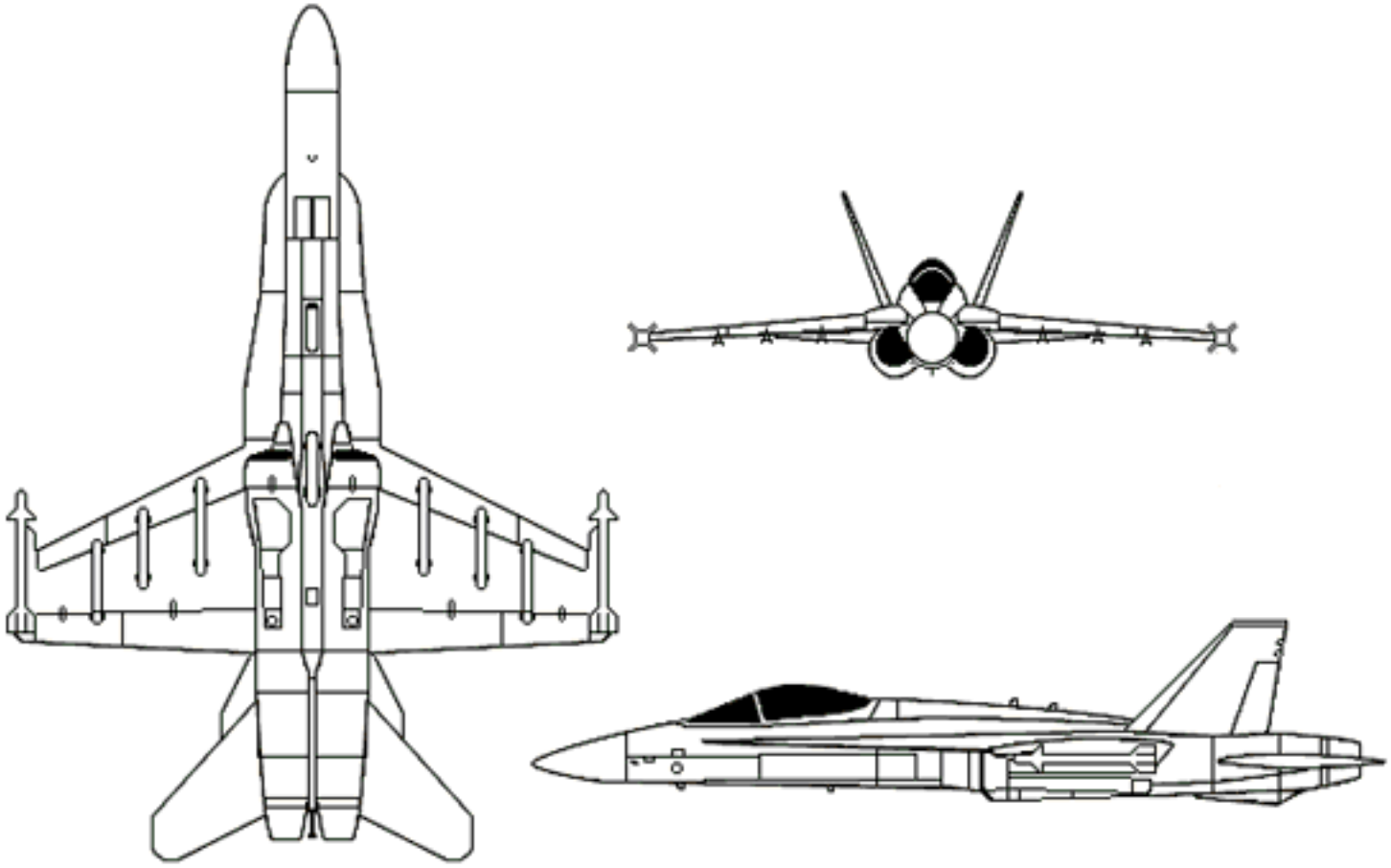
WEFT DESCRIPTION

Wings. Mid-mounted, delta-shaped. Missiles are normally mounted at the wing tips.
Engine(s). One in body. Oval air intake under the center of the fuselage. Single exhaust.
Fuselage. Long, slender body, widens at air intake. Pointed nose. Bubble canopy.
Tail. Swept-back, tapered fin with square tip. Flats mid-mounted on the fuselage, delta-shaped with square tips, and a slight negative slant. Two belly fins.

USER COUNTRIES

Bahrain, Belgium, Denmark, Egypt, Greece, Indonesia, Israel, Netherlands, Norway, Pakistan, South Korea, Portugal, Singapore, Taiwan, Thailand, Turkey, USA, Venezuela.

F/A-18 HORNET (McDONNELL DOUGLAS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-16 Fighting Falcon, MiG-29 Fulcrum, Su-27 Flanker, F-15 Eagle.
Crew. One; TF/A-18--two.
Role. US Marine Corps fighter, strike.
Armament. Cannon, bombs, missiles, rockets.
Dimensions. Length: 56 ft (17.08 m). Span: 37 ft, 6 in (11.44 m).

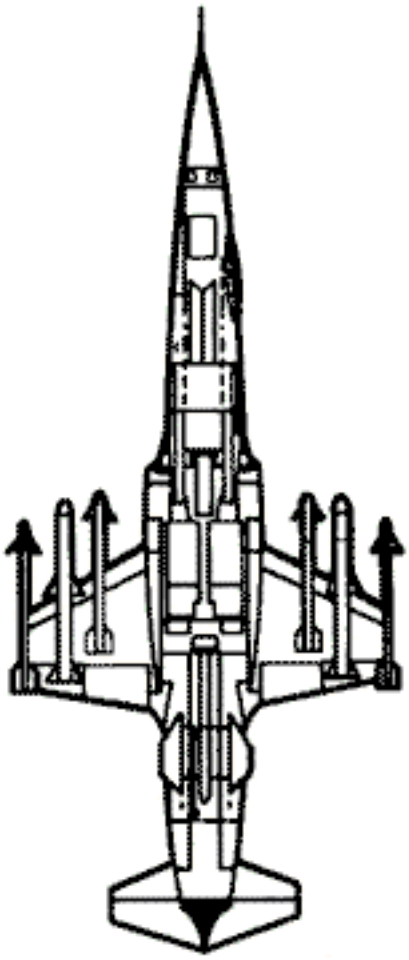
WEFT DESCRIPTION

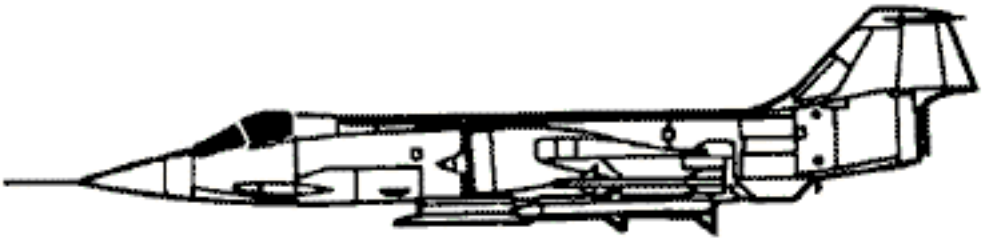
Wings. Mid-mounted, semidelta with prominent leading edge root extension on sides of fuselage from the wing to the front of the cockpit. Missiles are usually on square tips.
Engine(s). Two turbofans mounted in the aircraft rear section. Oval air intakes under the wings.
Fuselage. Barrel-shaped with solid, pointed nose. Aircraft widens at the air intakes and tapers to the rear. Bubble canopy.
Tail. Swept-back and tapered tail flats mid-mounted on the body. Twin, swept-back, and tapered tail fins mounted forward on the fuselage. Fins have an outward tilt.

USER COUNTRIES

Australia, Canada, Finland, Kuwait, Malaysia, Spain, USA.

F-104 STARFIGHTER (LOCKHEED)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-5 Freedom Fighter, F/A-18 Hornet.
Crew. One.
Role. All-weather tactical strike, fighter, reconnaissance.
Armament. Cannon, bombs, missiles.
Dimensions. Length: 54 ft, 9 in (16.7 m). Span: 22 ft (6.7 m).

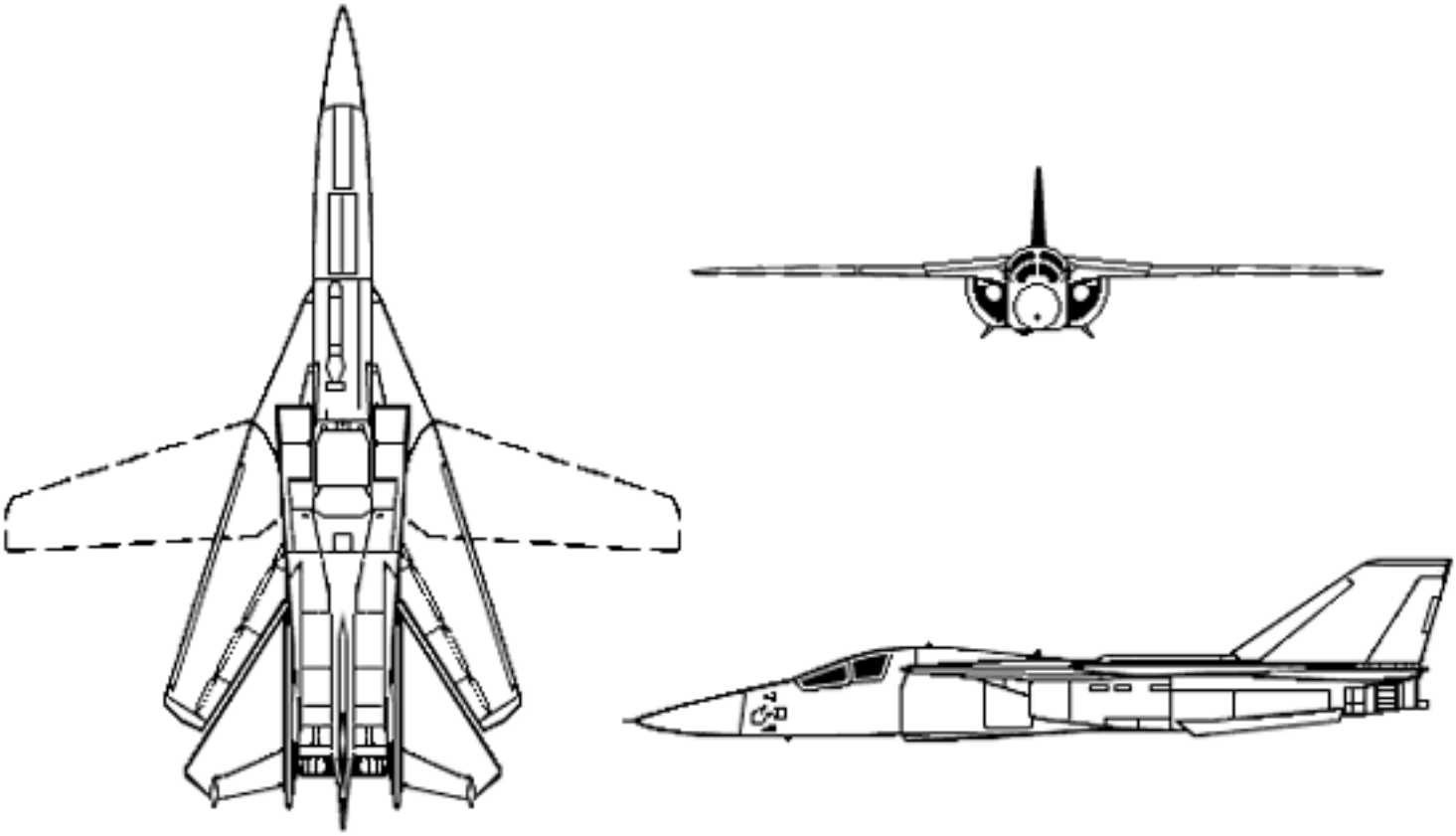
WEFT DESCRIPTION

Wings. Mid-mounted, equally tapered, with a negative slant. Missiles or fuel tanks at the square tips.
Engine(s). One turbojet in midsection of the body. Semicircular air intakes forward of the wings' leading edges.
Fuselage. Long and slender, thickens at the air intakes. Sharp-pointed nose. Bubble canopy.
Tail. Unequally tapered tail fin. About 1/3 of the fin overhangs the exhaust. Tail flats are equally tapered with square tips mounted high on the tail fin forming a T.

USER COUNTRIES

Germany, Greece, Italy, Taiwan, Turkey.

F-111 AARDVARK (GENERAL DYNAMICS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. MiG-27 Flogger D, Su-24 Fencer, Tornado.
Crew. Two.
Role. All-weather strike, attack, bomber.
Armament. Cannon, bombs, missiles, (SRAMs, ALCMs).
Dimensions. Length: 73 ft, 6 in (22.5 m). Span: 63 ft (19.3 m).

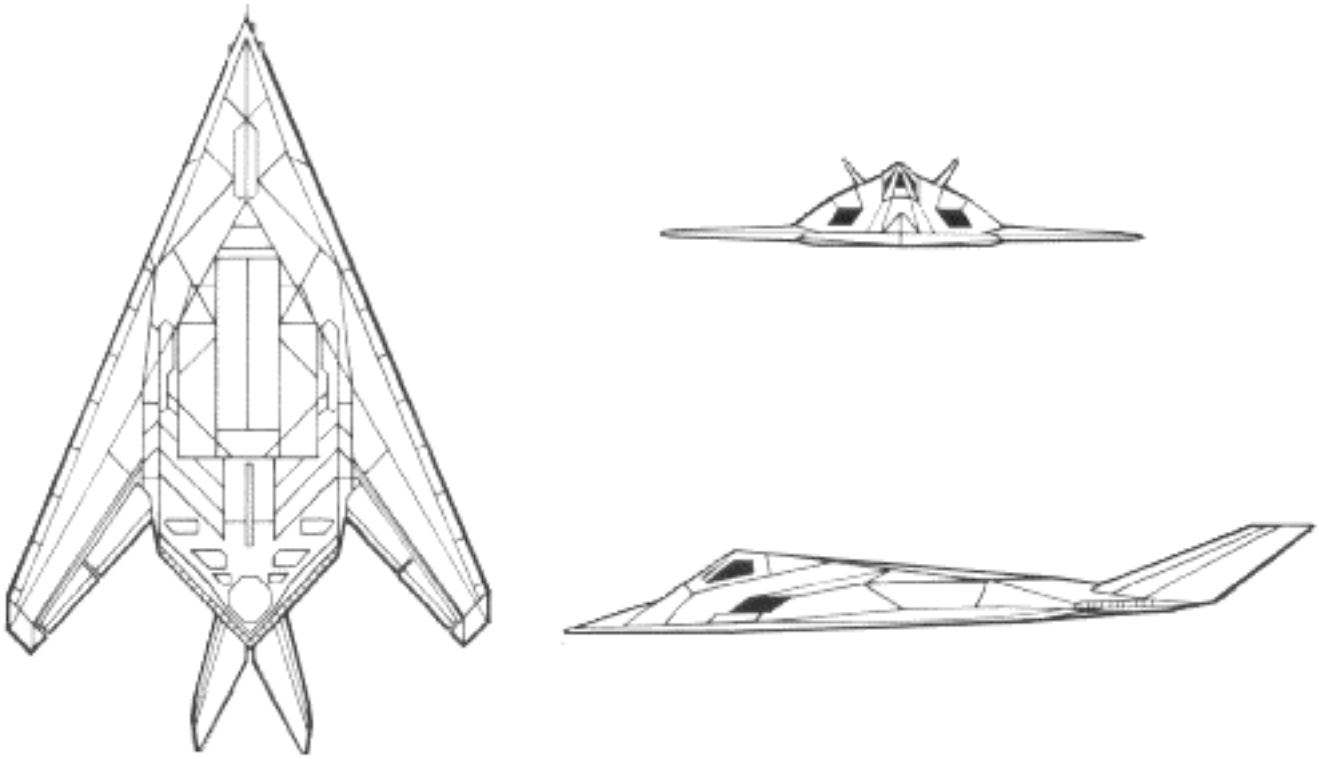
WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with blunt tips (wingspan changes in flight).
Engine(s). Two jet engines mounted inside the rear section. The intakes are 1/4 pie-shaped under the wings, giving the aircraft a rounded appearance. Twin exhausts.
Fuselage. Long, sharp-pointed nose, widens at the air intakes, and continues through the rear section. Flush canopy.
Tail. Large swept-back fin covering 1/3 of the body, square tip. High-mounted, swept-back flats with square tips. Tail fin splits the dual exhaust.

USER COUNTRIES

Australia, USA.

F-117A NIGHT HAWK (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. None.
Crew. One.
Role. Defense suppression, precision bombing against high-priority targets.
Armament. Bombs, missiles.
Dimensions. Length: 65 ft, 11 in (20.08 m). Span: 43 ft, 4 in (13.2 m).

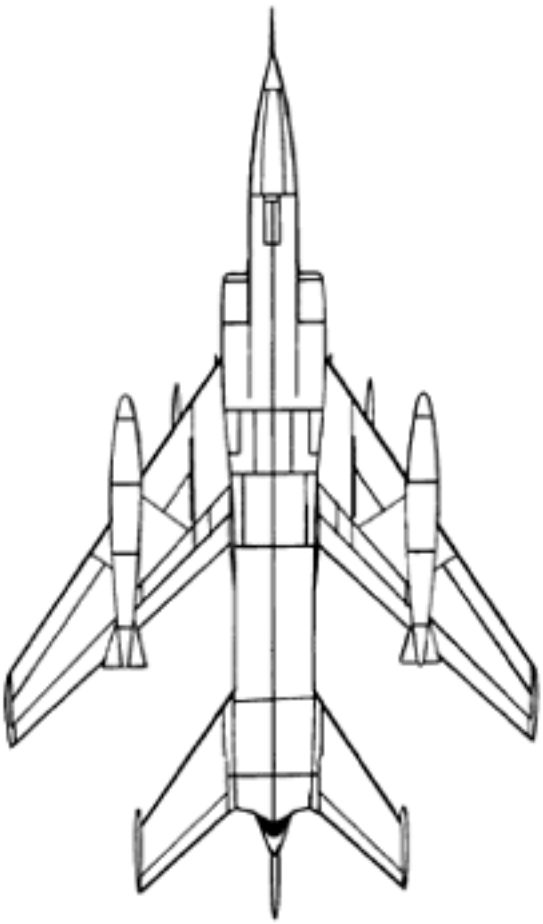
WEFT DESCRIPTION

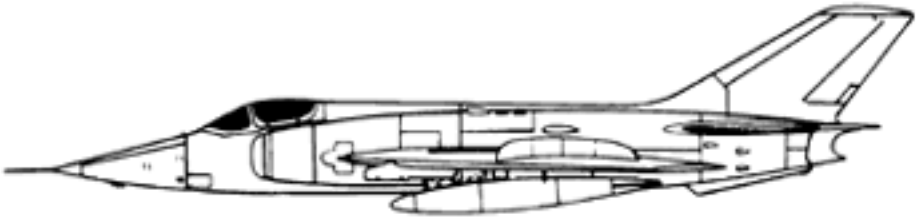
Wings. Low-mounted, swept-back, and tapered with square tips.
Engine(s). Two turbofans mounted inside the body. Rectangular, overwing air intakes. Narrow slotted "platypus" exhausts.
Fuselage. Sharp, pointed nose. Pyramid and faceted appearance. Stepped-up cockpit.
Tail. Sharply swept-back and tapered, V-configured tail fins with square tips. No tail flats.

USER COUNTRY

USA.

FANTAN A, Q-5 (NANCHANG)





GENERAL DATA

Country of Origin. People’s Republic of China.
Similar Aircraft. Super Etendard, Yak-38 Forger, Mirage F1.
Crew. One.
Role. Fighter-bomber.
Armament. Rockets, missiles, bombs.
Dimensions. Length: 54 ft, 10 in (16.74 m). Span: 31 ft, 10 in (9.8 m).

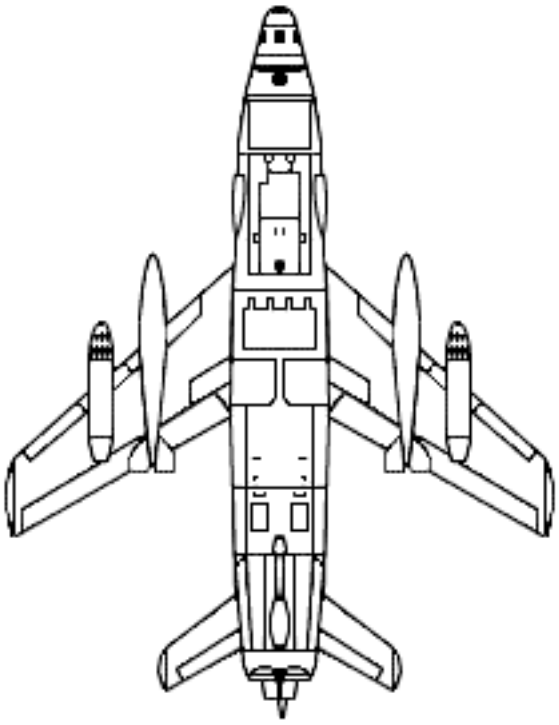
WEFT DESCRIPTION

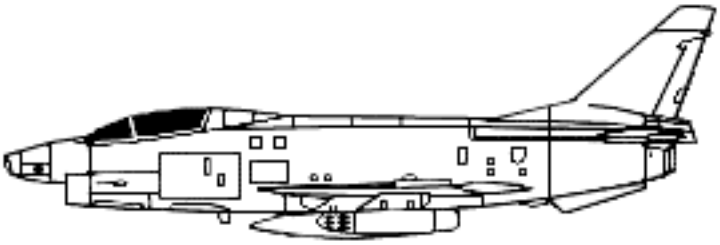
Wings. Mid-mounted, sharply swept-back, and tapered with blunt tips. Wing fences.
Engine(s). Two turbojets are located inside the body. Semicircular air intakes. Two exhausts.
Fuselage. Thick, flattened, and upward taper to the rear section. Bubble canopy. Pointed nose.
Tail. Flats high-mounted on the body, swept-back, and tapered with square tips. Sharply swept-back tail fin with blunt tip.

USER COUNTRIES

Bangladesh, North Korea, Pakistan, People’s Republic of China.

G.91Y (AERITALIA)





GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. G.91 Fiat, A-7 Corsair II, MiG-17 Fresco, F-16 Fighting Falcon.
Crew. One; G.91T--two.
Role. Fighter-bomber, reconnaissance.
Armament. Two 30-mm cannons, rockets, bombs, missiles.
Dimensions. Length: 38 ft, 3 in (11.66 m). Span: 29 ft, 6 in (9 m).

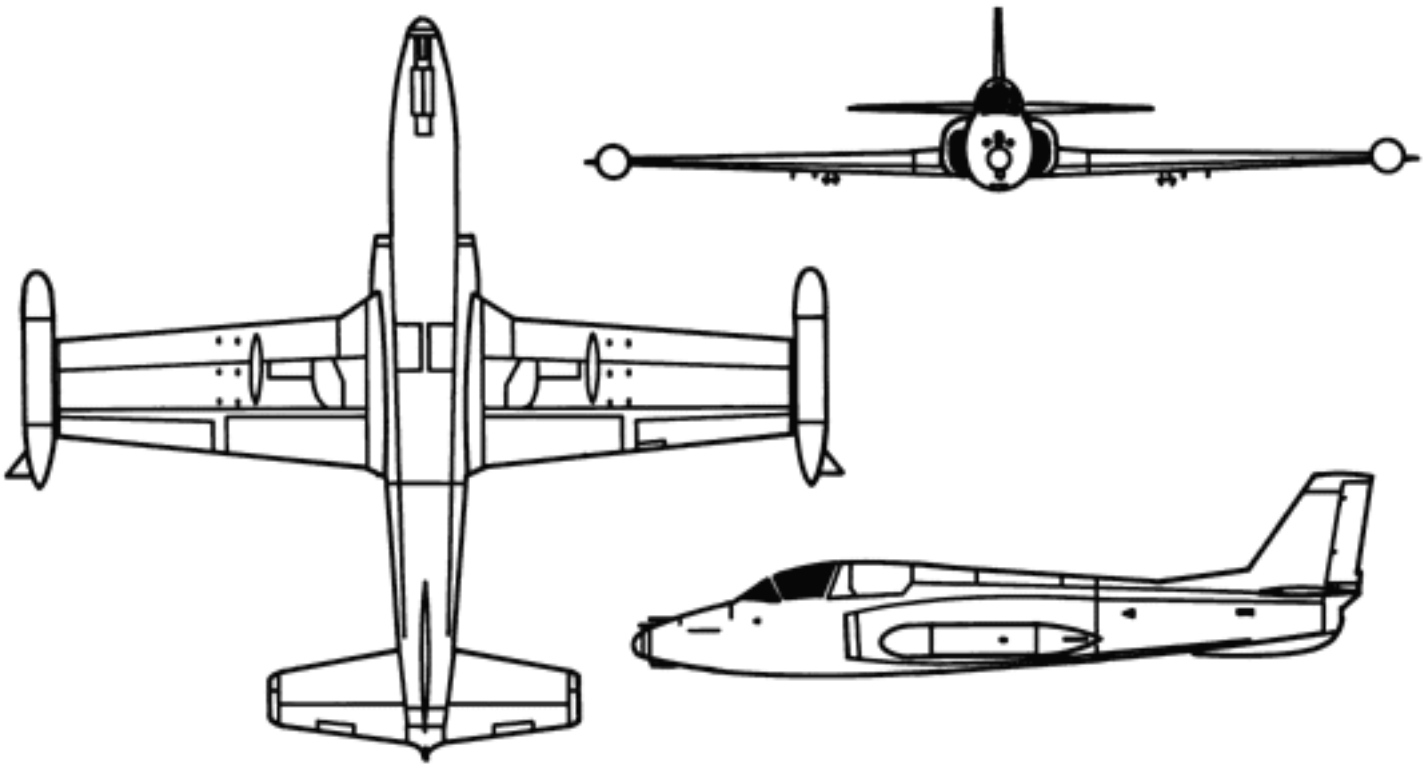
WEFT DESCRIPTIONS

Wings. Low-mounted, swept-back, and tapered with blunt tips.
Engine(s). Two turbojets mounted in the fuselage. Oval air intake beneath the nose section. Dual exhaust.
Fuselage. Flat and thick with a pointed nose. Bubble canopy well forward on the nose section.
Tail. High-mounted on body, swept-back, and tapered tail flats. Swept-back and tapered tail fin with a blunt tip.

USER COUNTRIES

Angola(G.91R), Germany(G.91R), Italy, Portugal(G.91R).

GALEB/JASTREB (SOKO)



GENERAL DATA

Country of Origin. Yugoslavia.
Similar Aircraft. M.B. 326, M.B. 339A.
Crew. One.
Role. Light-attack.
Armament. Machine guns, bombs, rockets.
Dimensions. Length: 34 ft (10.36 m). Span: 34 ft, 4 in (10.48 m).

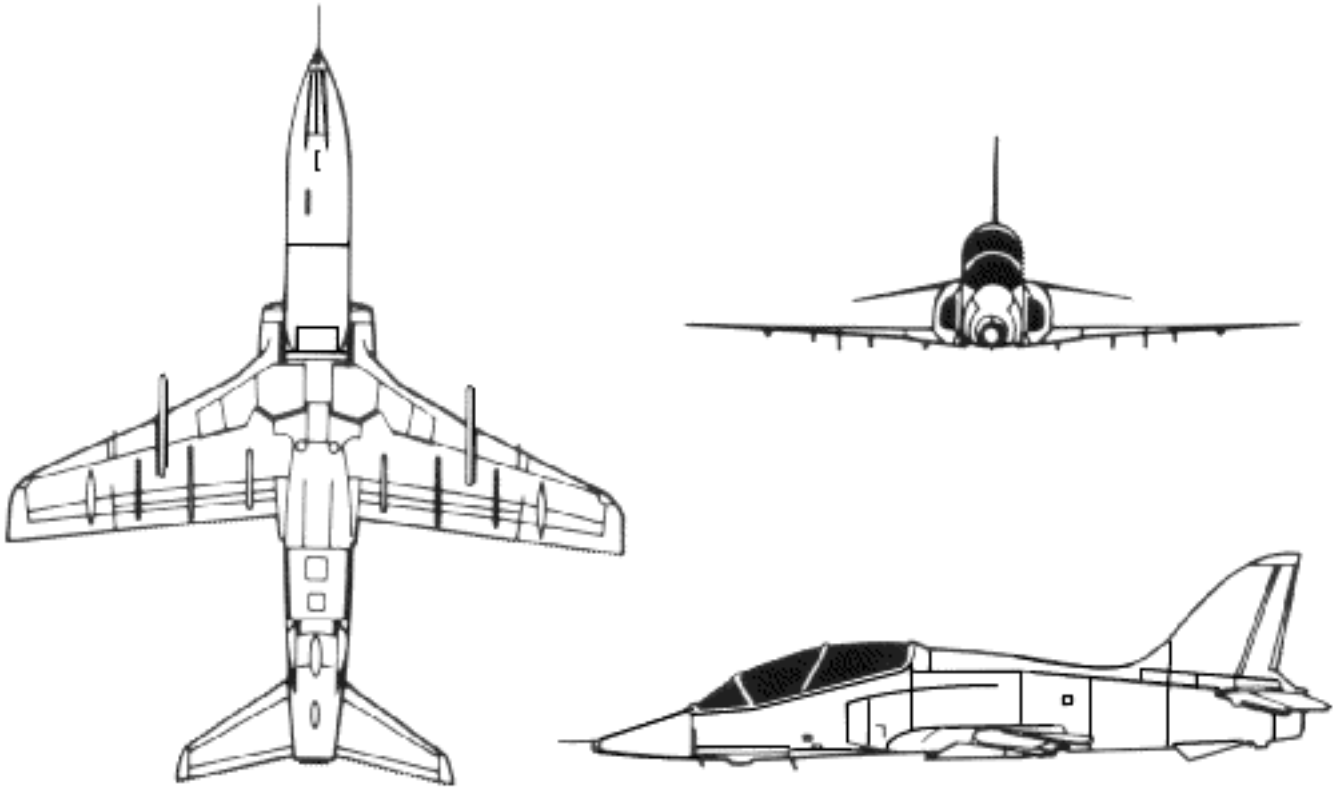
WEFT DESCRIPTION

Wings. Low-mounted and slightly tapered. Fuel tanks are generally mounted at the square tips.
Engine(s). One turbojet inside body. Semicircular air intakes alongside the body extending from the rear of, and below, the canopy.
Fuselage. Rounded, tapered to the rear, and round nose. Bubble canopy. Rear of canopy is flush with the dorsal spine.
Tail. Flats low-mounted on the tail fin, equally tapered with square tips. Fin swept-back and tapered with a blunt tip.

USER COUNTRIES

Bosnia-Herzogovina, Burma(Super Galeb), Libya, Yugoslavia, Zambia.

HAWK (BAe)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. Alpha Jet, M.B.326, AMX, F-5 Freedom Fighter.
Crew. Two.
Role. Light-attack, trainer.
Armament. Bombs, gun packs, rockets.
Dimensions. Length: 39 ft (11.94 m). Span: 31 ft (9.42 m).

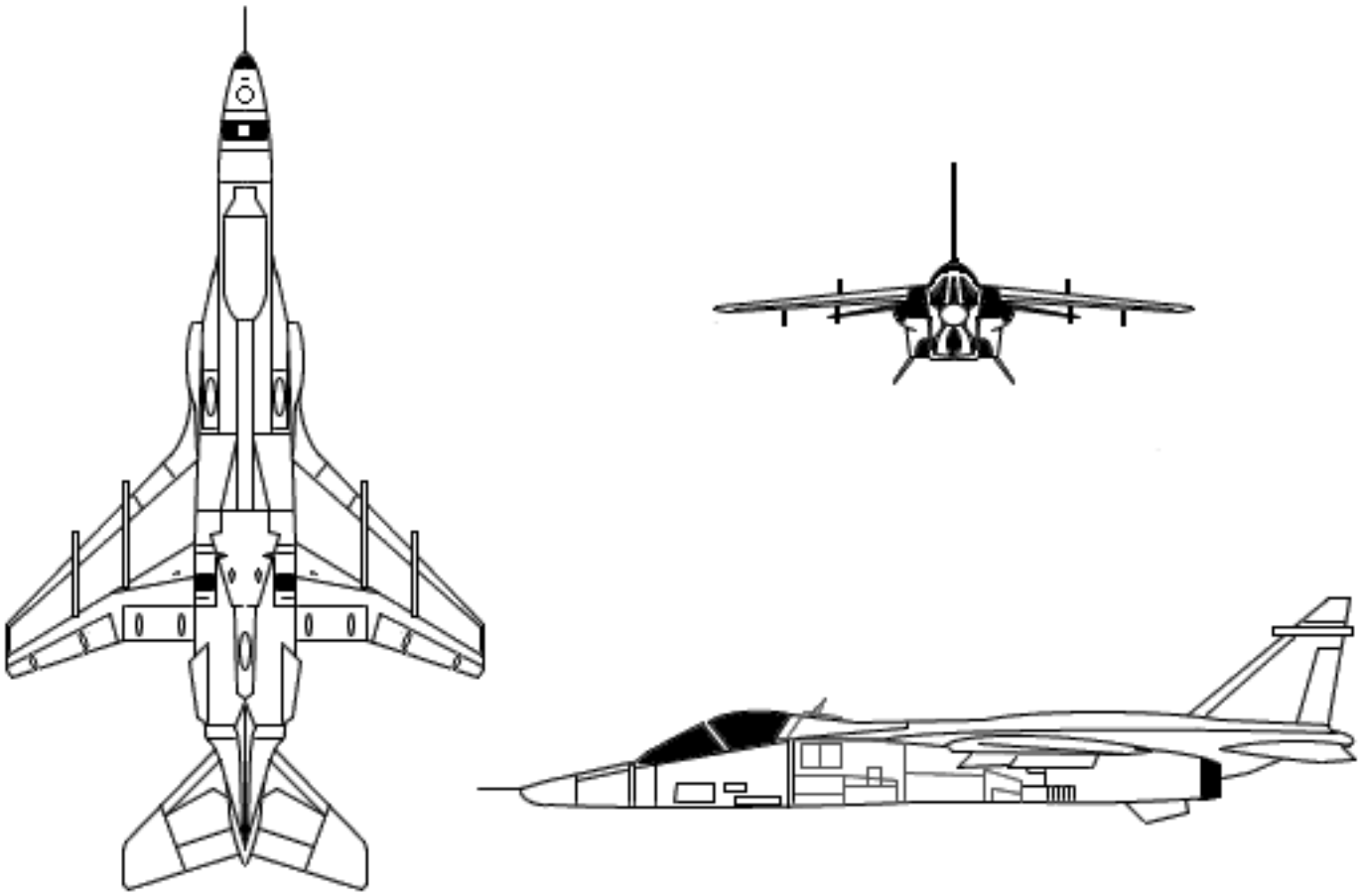
WEFT DESCRIPTION

Wings. Low-mounted, swept-back, and tapered with curved tips.
Engine(s). One turbofan located inside the body. Semicircular air intakes alongside the body forward of the wing roots. Single exhaust.
Fuselage. Club-shaped with pointed nose and a taper to the rear. Bubble canopy.
Tail. Flats are high-mounted on the fuselage, swept-back, and tapered. Swept-back and tapered fin with a curved tip.

USER COUNTRIES

Brunei, Finland, Indonesia, Kenya, Kuwait, Malaysia, Oman, Saudi Arabia, South Korea, United Arab Emirates, UK, USA (T-45 Goshawk).

JAGUAR (BREGUET, BAe)



GENERAL DATA

Countries of Origin. France, UK.
Similar Aircraft. F-4 Phantom II, Mitsubishi F-1, MiG-27 Flogger, AMX.
Crew. One; trainer--two.
Role. Strike, fighter, trainer.
Armament. Cannon, rockets, bombs, missiles.
Dimensions. Length: 51 ft (15.54 m). Span: 28 ft (8.54 m).

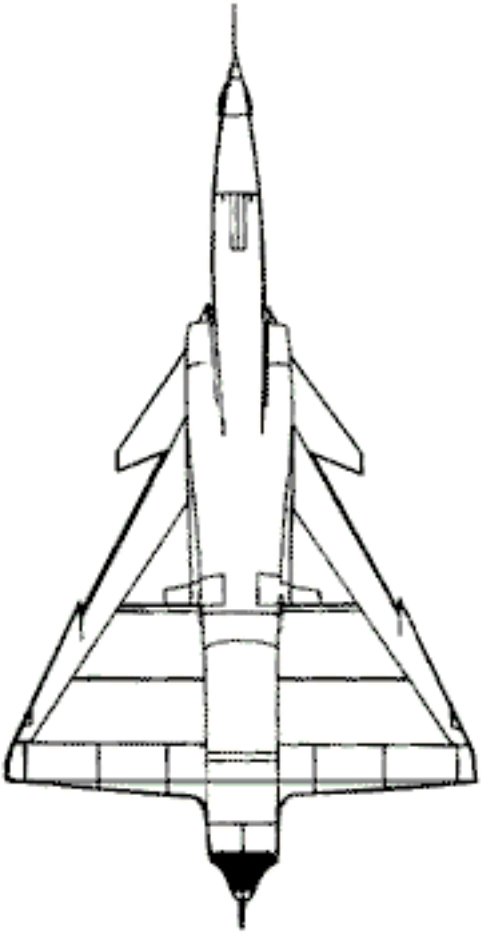
WEFT DESCRIPTION

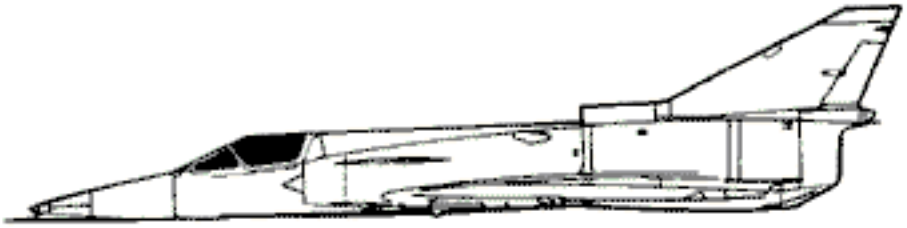
Wings. High-mounted, swept-back, and modified delta with blunt tips.
Engine(s). Two turbofans mounted to the rear of the cockpit. Rectangular air intakes on sides of cockpit. Engine exhausts show prominently under the forward portion of the tail.
Fuselage. Long, pointed, chiseled nose. Body widens at the air intakes rectangular to the exhausts. Overhanging tail section. Two belly fins. Bubble canopy.
Tail. Tail flats and fin are swept-back and tapered with square tips. Flats are mid-mounted on the fuselage with a negative slant.

USER COUNTRIES

Ecuador, France, India, Nigeria, Oman, UK.

KFIR (IAI)





GENERAL DATA

Country of Origin. Israel.
Similar Aircraft. Mirage III/5, Mirage 2000, Viggen.
Crew. One; trainer--two.
Role. Ground-attack, interceptor.
Armament. 30-mm cannons, missiles, bombs, rockets.
Dimensions. Length: 53 ft, 8 in (16.36 m). Span: 27 ft (8.24 m).

WEFT DESCRIPTION

Wings. Low-mounted, delta-shaped with a sawtooth in the leading edges. Small canards are mounted on the air intakes.

Engine(s). One turbojet inside fuselage. Semicircular air intakes alongside the fuselage. Large, single exhaust.

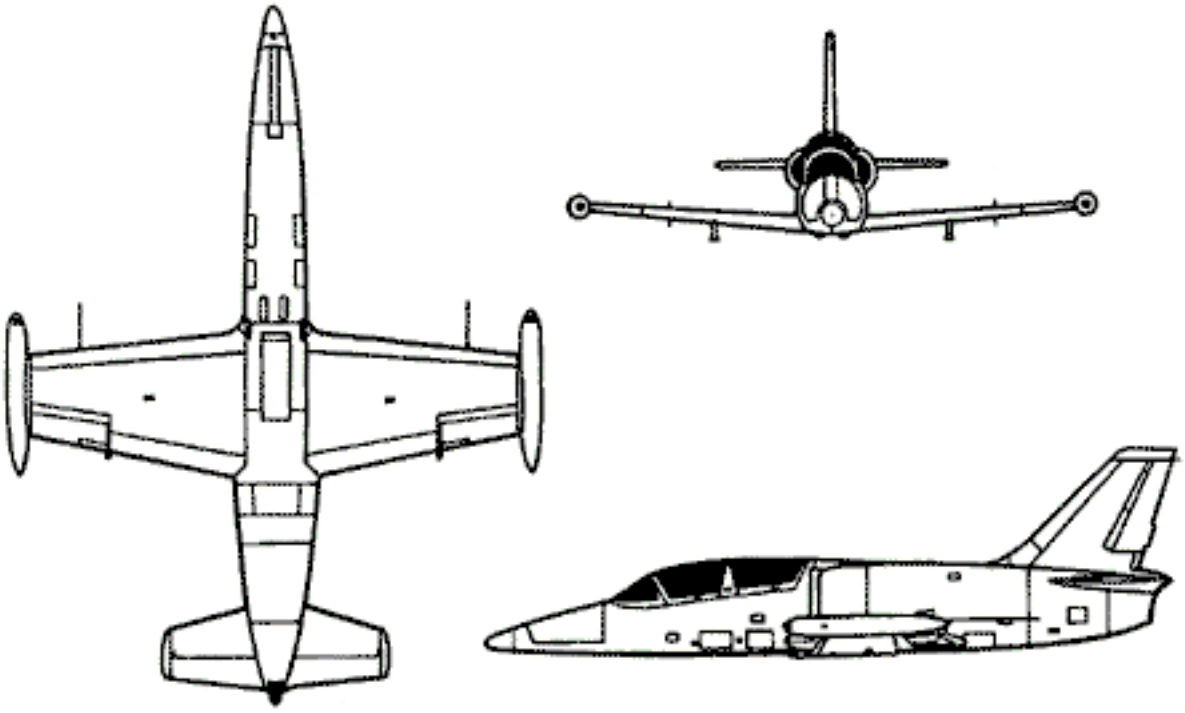
Fuselage. Tube-shaped with long, solid, pointed nose. Body widens at the air intakes. Bubble canopy flush with the spine.

Tail. No tail flats. Fin is swept-back and tapered with a prominent step in the leading edge.

USER COUNTRIES

Colombia, Ecuador, Israel, USA.

L-39 ALBATROSS (AERO)



GENERAL DATA

Country of Origin. Czechoslovakia.
Similar Aircraft. Galeb/Jastreb, Hawk.
Crew. Two.
Role. Trainer, light-attack.
Armament. Pod-mounted gun pack, bombs, rockets.
Dimensions. Length: 39 ft, 8 in (12.1 m). Span: 31 ft (9.4 m).

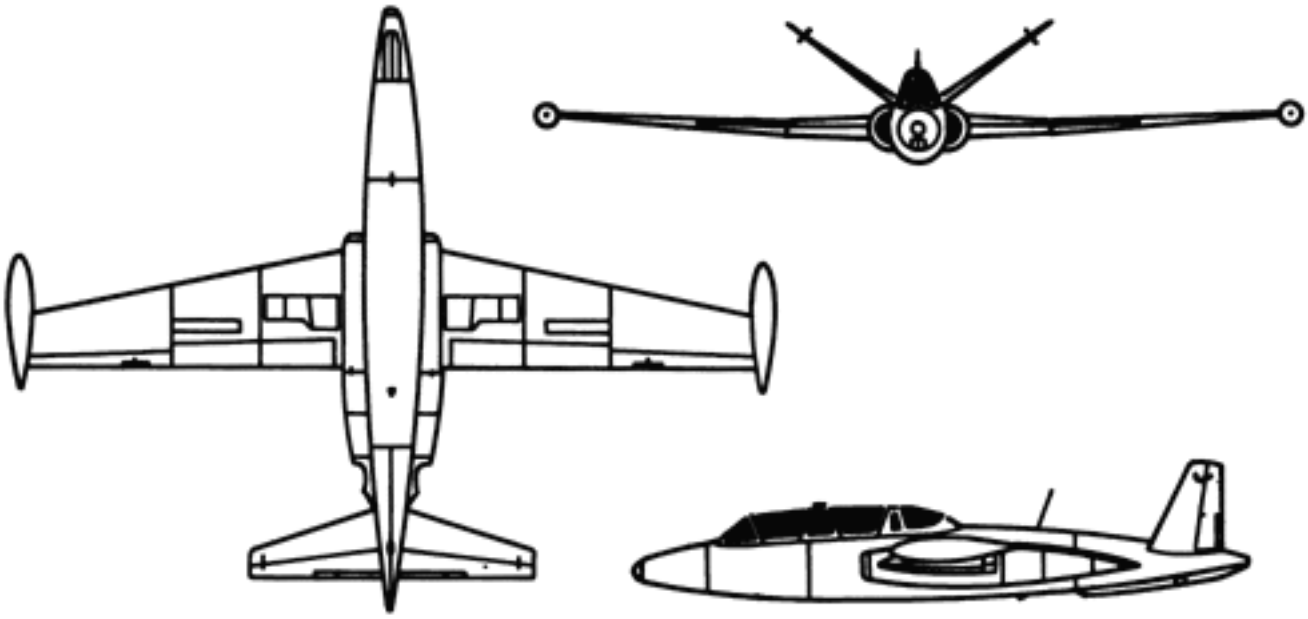
WEFT DESCRIPTION

Wings. Low-mounted, equally tapered with wing tip tanks.
Engine(s). One turbofan inside body. Air intakes are semicircular and high-mounted on the fuselage aft of the cockpit. Small, single exhaust.
Fuselage. Tube-shaped, tapering to the front and rear. Pointed nose and bubble canopy.
Tail. Swept-back and tapered fin with a blunt tip. Flats are high-mounted on the fuselage, equally tapered with blunt tips.

USER COUNTRIES

Algeria, Czech Republic, Egypt, Libya, Lithuania, Nicaragua, Nigeria, Romania, Slovakia.

MAGISTER CM. 170 (AEROSPATIALE)



GENERAL DATA

Country of Origin. France.
Similar Aircraft. M.B. 326, M.B. 337.
Crew. Two.
Role. Light-attack, trainer.
Armament. Missiles, bombs, rockets, machine guns.
Dimensions. Length: 33 ft (10.06 m). Span: 37 ft, 5 in (11.4 m).

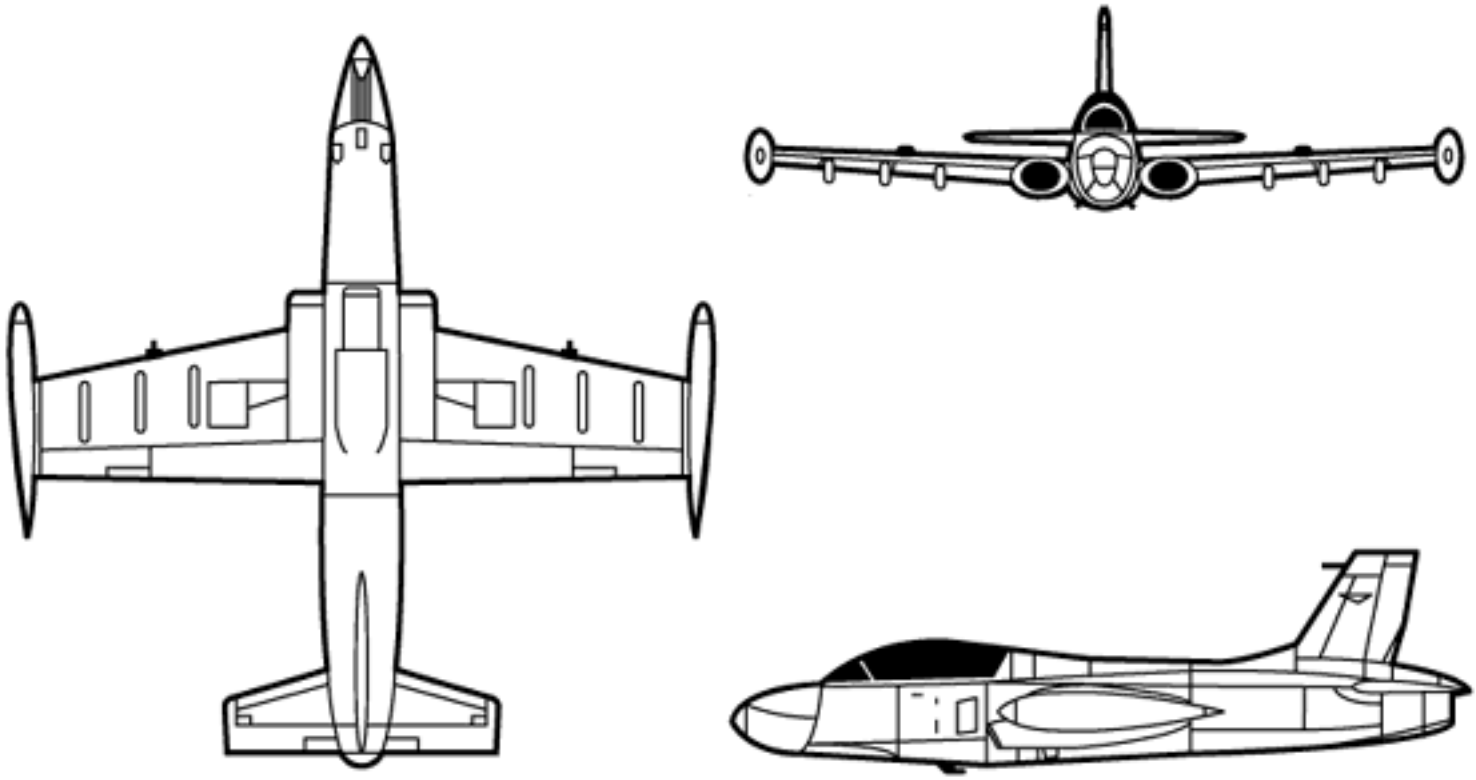
WEFT DESCRIPTION

Wings. Mid-mounted and back-tapered. Fuel tanks are usually at the square tips.
Engine(s). Two turbojets mounted on sides of fuselage. Semicircular air intakes mounted in the wing roots. Small exhausts located just forward of the tail section.
Fuselage. Slender, tubular, and tapered to rear. Rounded nose and long, bubble canopy.
Tail. V-shaped tail fins that also serve as tail flats, back-tapered with blunt tips.

USER COUNTRIES

Belgium, Cameroon, Gabon, Libya, Morocco, Senegal, Togo.

M.B. 326 (AERMACCHI)



GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. Galeb/Jastreb, M.B. 339A, Hawk, A-37 Dragonfly.
Crew. One; trainer--two.
Role. Light-attack, trainer.
Armament. Rockets, missiles, bombs, gun pods.
Dimensions. Length: 35 ft (10.66 m). Span: 35 ft, 7 in (10.86 m).

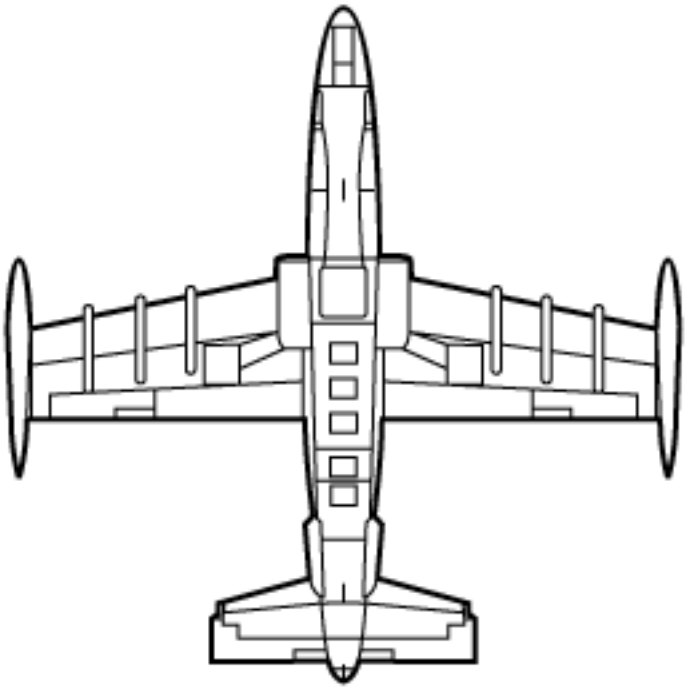
WEFT DESCRIPTION

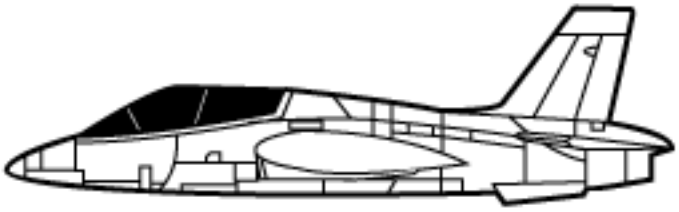
Wings. Low-mounted and back-tapered leading edge with square tips. Tapered pods mounted on square wing tips.
Engine(s). One turbojet mounted inside the body. Round air intakes in wing roots. Single exhaust protruding past tail section.
Fuselage. Tubular, tapers to rear. Round nose and a bubble canopy.
Tail. Flats high-mounted on the body, back-tapered leading edges, and blunt tips. Fin is swept-back and tapered with a square tip.

USER COUNTRIES

Australia, Brazil, Ghana, Paraguay, Togo, Tunisia, United Arab Emirates, Zaire, Zambia.

M.B. 339A (AERMACCHI)





GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. Galeb-Jastreb, Hawk, M.B. 326, A-37 Dragonfly.
Crew. Two; 339K--one.
Role. Trainer, ground-attack, ECM.
Armament. Bombs, gun pods, minigun, missiles, rockets.
Dimensions. Length: 36 ft (10.98 m). Span: 35 ft, 8 in (10.86 m).

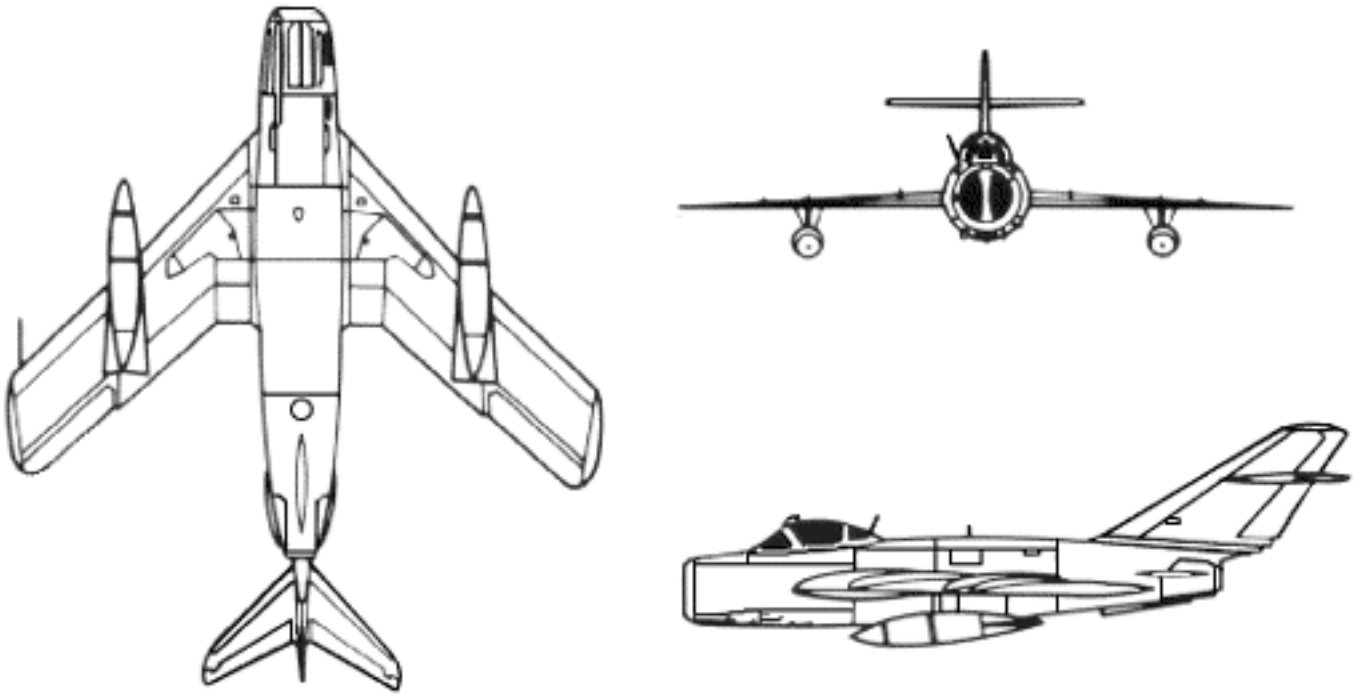
WEFT DESCRIPTION

Wings. Low-mounted with back-tapered leading edge and straight trailing edge. Positive slant. Fuel tanks are usually at the square tips.
Engine(s). One turbojet inside the body. Oval air intakes in wing roots. Single exhaust protrudes past tail.
Fuselage. Tubular, tapered to the front and to the rear. Long, bubble canopy and a curved dorsal spine.
Tail. Flats high-mounted on the fuselage with tapered leading edges and blunt tips. Fin is swept-back and tapered with a blunt tip.

USER COUNTRIES

Argentina, Ghana, Italy, Malaysia, New Zealand, Nigeria, Peru, United Arab Emirates.

MiG-17 FRESCO (MIKOYAN-GUREVICH)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-19 Farmer, G.91Y, Su-17 Fitter, MiG-21 Fishbed.
Crew. One.
Role. Fighter-bomber.
Armament. Three 23-mm cannons, bombs, rockets.
Dimensions. Length: 36 ft, 5 in (11.1 m). Span: 31 ft, 7 in (9.64 m).

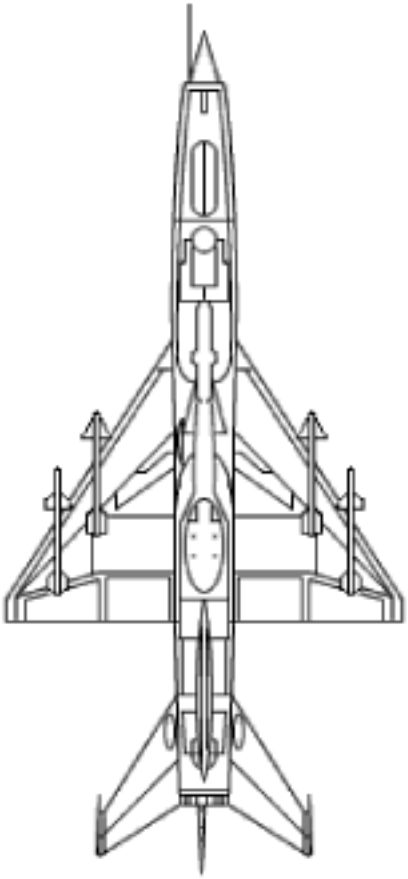
WEFT DESCRIPTION

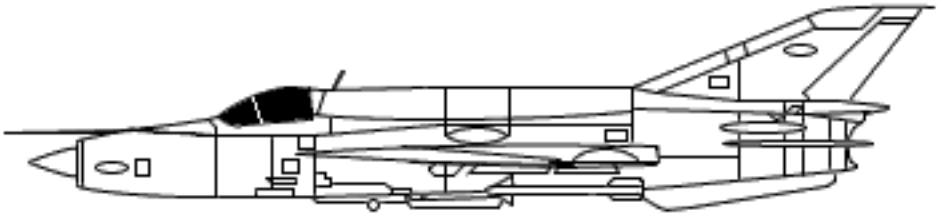
Wings. Mid-mounted, swept-back, and tapered with blunt tips. Wide wing roots.
Engine(s). One turbojet inside the body, round air intake in the nose. Single, small exhaust.
Fuselage. Short, thick, cigar-shaped, tapered to the rear. Blunt nose and bubble canopy.
Tail. Fin is swept-back and tapered with rounded tip. Flats are high-mounted on the tail fin, swept-back, and tapered. Flats and fin overhang the exhaust.

USER COUNTRIES

Afghanistan, Albania, Algeria, Angola, Congo, Cuba, Ethiopia, Guinea Republic, Guinea-Bissau, Madagascar, Mali, Mongolia, North Korea, (J-5), North Yemen, People’s Republic of China (J-5), Romania, Sri Lanka, Somalia, South Yemen, Sudan, Tanzania, Vietnam.

MiG-21 FISHBED (MIKOYAN-GUREVICH)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Fitters, all models, Mirage III/5, A-4 Skyhawk.
Crew. One; MiG-21U Mongol--two.
Role. Ground-attack, interceptor, trainer.
Armament. Cannon, missiles, rockets, bombs.
Dimensions. Length: 51 ft, 8 in (15,78 m). Span: 23 ft, 5 in (7.16 m).

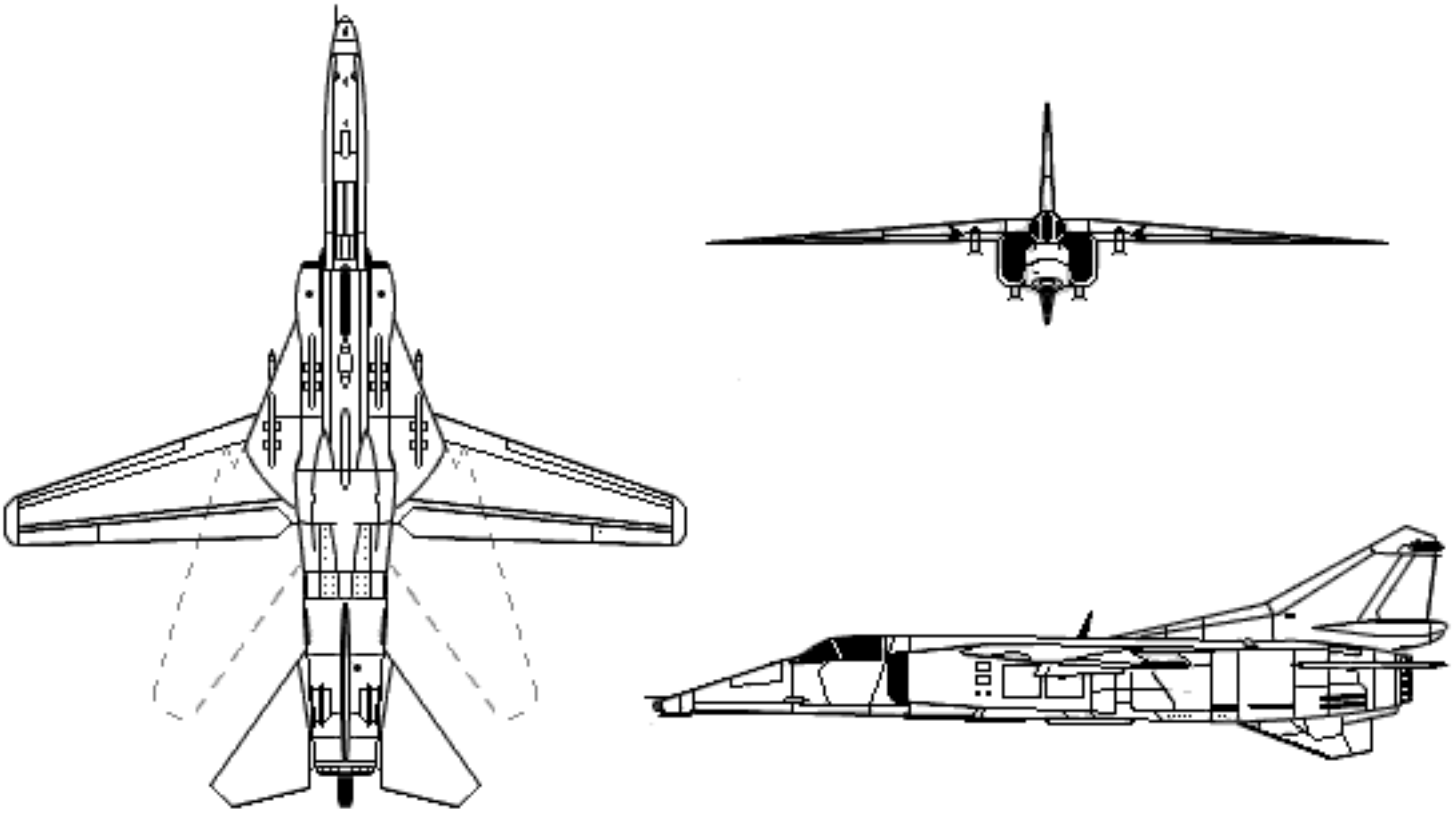
WEFT DESCRIPTION

Wings. Mid-mounted delta wing with small square tips.
Engine(s). One turbojet inside the body. Small round air intake in the nose. Single exhaust.
Fuselage. Long, tubular body with a blunt nose and bubble canopy. One belly fin under the rear section. Large dorsal spine flush with the canopy.
Tail. Fin swept-back and tapered with a square tip. Flats are mid-mounted on the body, swept-back, and tapered with square tips.

USER COUNTRIES

Afghanistan, Albania (J-7), Algeria, Angola, Azerbiajan, Bangladesh, Bulgaria, Burma, Cambodia, Congo, Croatia, Cuba, Czech Republic, Egypt, Ethiopia, Finland, Germany, Gunea Republic, Hungary, India, Iran, Iraq, Kazakhstan, Laos, Libya, Madagascar, Mali, Mongolia, Mozambique, Nigeria, North Korea, North Yemen, Pakistan (J-7), People’s Republic of China (J-7), Poland, Romania, Slovakia, South Yemen, Sri Lanka, Sudan, Syria, Tanzania, Vietnam, Yugoslavia, Zambia, Zimbebwe.

MiG-27 FLOGGER D, J (MIKOYAN-GUREVICH)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-23 Flogger B/E/G, F-111, Tornado, Su-24 Fencer, Mirage F1, Super Etendard, Jaguar.
Crew. One.
Role. Ground-attack, fighter.
Armament. Missiles, bombs, rockets, cannon.
Dimensions. Length: 55 ft (16.6 m). Span: 46 ft, 9 in (14.26 m).

WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with blunt tips.

Engine(s). One inside the body. Rectangular box-like air intakes forward of the wing roots. Single exhaust.

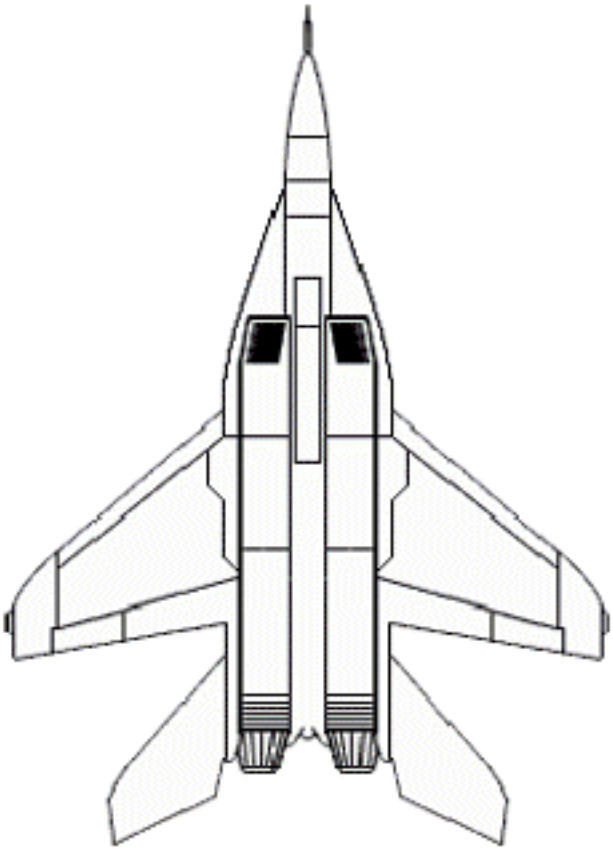
Fuselage. Long and tubular, except where air intakes give a box-like appearance. Long, downward-sloping, sharply pointed nose. Stepped canopy. Large, swept-back, and tapered belly fin under the rear section.

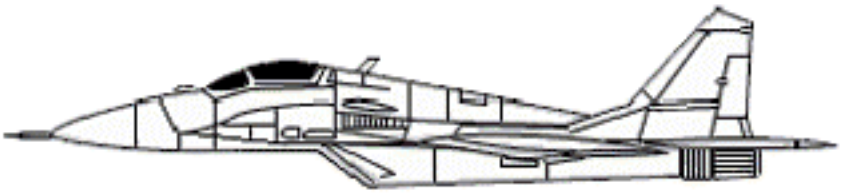
Tail. Swept-back and tapered tail fin with curved dorsal in leading edge and angular tip. Swept-back and tapered flats high-mounted on the fuselage with angular tips.

USER COUNTRIES

Belarus, CIS, India, Kazakhstan.

MiG-29 FULCRUM (MIKOYAN-GUREVICH)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. F/A-18 Hornet, F-16 Fighting Falcon, F-15 Eagle, Su-27 Flanker.
Crew. One.
Role. Attack, counterair fighter.
Armament. Missiles, 30-mm gun.
Dimensions. Length: 50 ft, 10 in (15.6 m). Span: 33 ft, 7 in (10.26 m).

WEFT DESCRIPTION

Wings. Swept-back and tapered with square tips. LERXs are wide and curved down to the front. LERX begins on the nose below the mid-mount point, and the wings' trailing edges end at a high-mounted point.

Engine(s). Twin jets are mounted low and to the sides of the fuselage. Diagonal-shaped air intakes give a box-like appearance. Large exhausts.

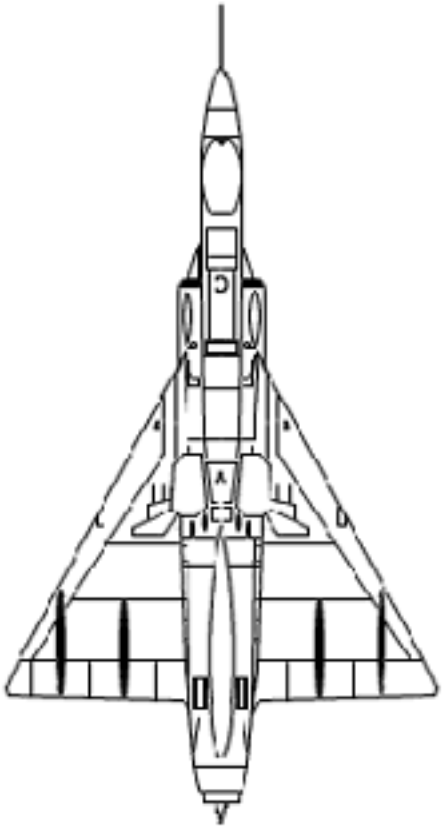
Fuselage. Long, thin, slender body with long, pointed drooping nose. High-mounted bubble canopy.

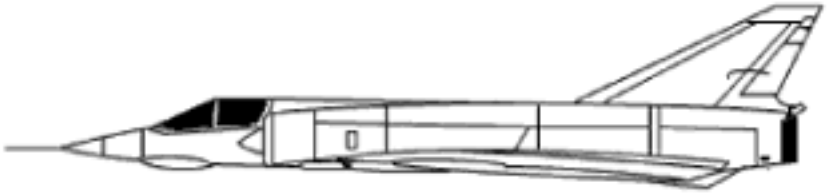
Tail. Fins have sharply tapered leading edges, canted outward with angular, cutoff tips. Flats are high-mounted on the fuselage, movable, swept-back, and tapered with a negative slant.

USER COUNTRIES

Belarus, Bulgaria, CIS, Cuba, Czech Republic, Germany, Hungary, India, Iran, Iraq, Malasia, Muldova, North Korea, Poland, Romania, Slovakia, Syria, Ukraine, Yugoslavia.

MIRAGE III/5 (DASSAULT-BREGUET)





GENERAL DATA

Country of Origin. France.
Similar Aircraft. Kfir C-2, Viggen, MiG-21 Fishbed, A-4 Skyhawk, Fantan A.
Crew. One; trainer--two.
Role. Ground-attack, fighter, reconnaissance.
Armament. 30-mm cannon, bombs, rockets.
Dimensions. Length: Mirage III: 49 ft, 3 in (15.02 m). Mirage 5: 51 ft (15.55 m). Span: 27 ft (8.24 m).

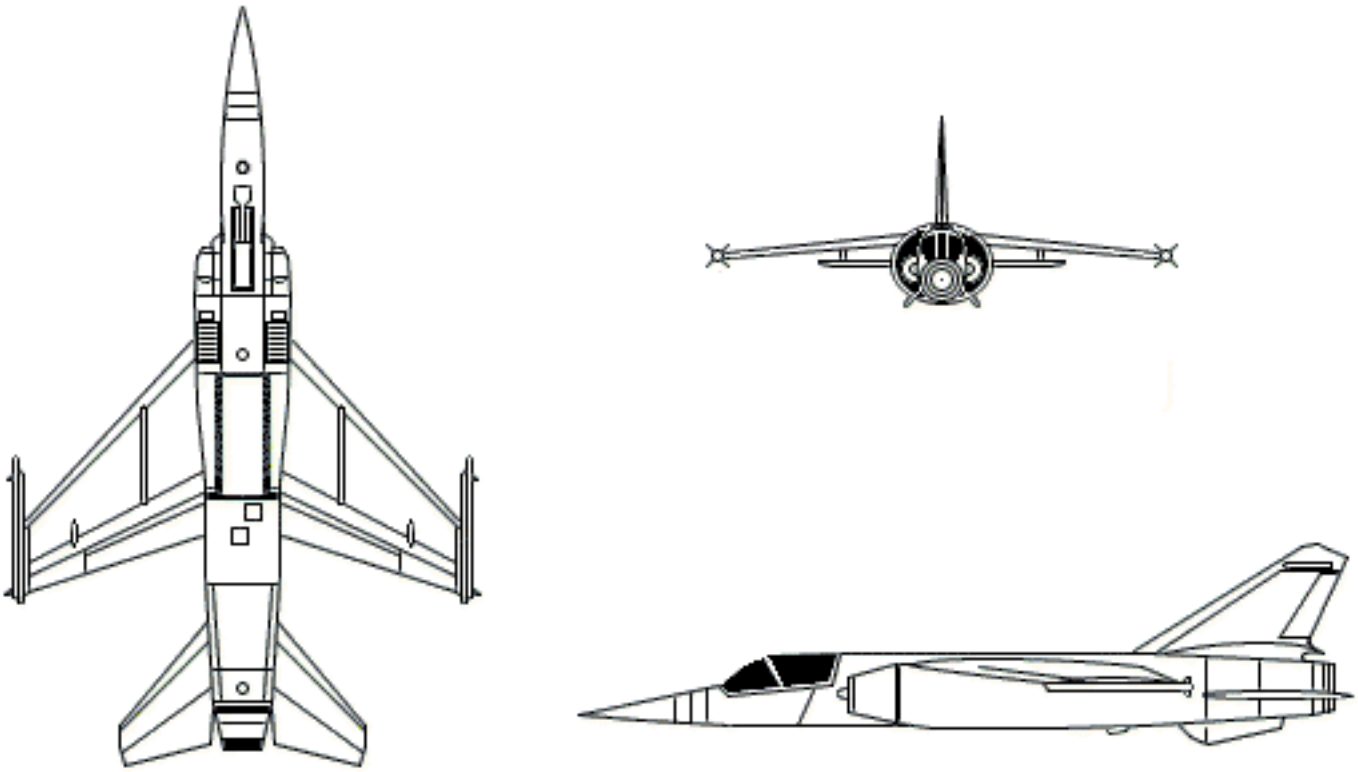
WEFT DESCRIPTION

Wings. Low-mounted delta wing with pointed tips.
Engine(s). One turbojet inside fuselage. Semicircular air intakes are forward of the wing roots below the canopy. Large, single exhaust.
Fuselage. Long, slender, and tubular with a pointed nose and a bubble cockpit.
Tail. Large, swept-back, and tapered tail fin with a square tip. No tail flats.

USER COUNTRIES

Argentina, Brazil, Chile (Mirage 5 and 50), Colombia, Egypt, France, Gabon, Lebanon, Libya, Pakistan, Peru, South Africa, Switzerland, Venezuela (Mirage 50), Zaire.

MIRAGE F1 (DASSAULT-BREGUET)



GENERAL DATA

Country of Origin. France.
Similar Aircraft. Super Etendard, Mitsubishi F-1, AV-8B Harrier II, Fantan A.
Crew. One; trainer--two.
Role. Attack, fighter, reconnaissance.
Armament. Two 30-mm cannons, missiles, bombs.
Dimensions. Length: 49 ft (14.94 m). Span: 27 ft, 7 in (8.4 m).

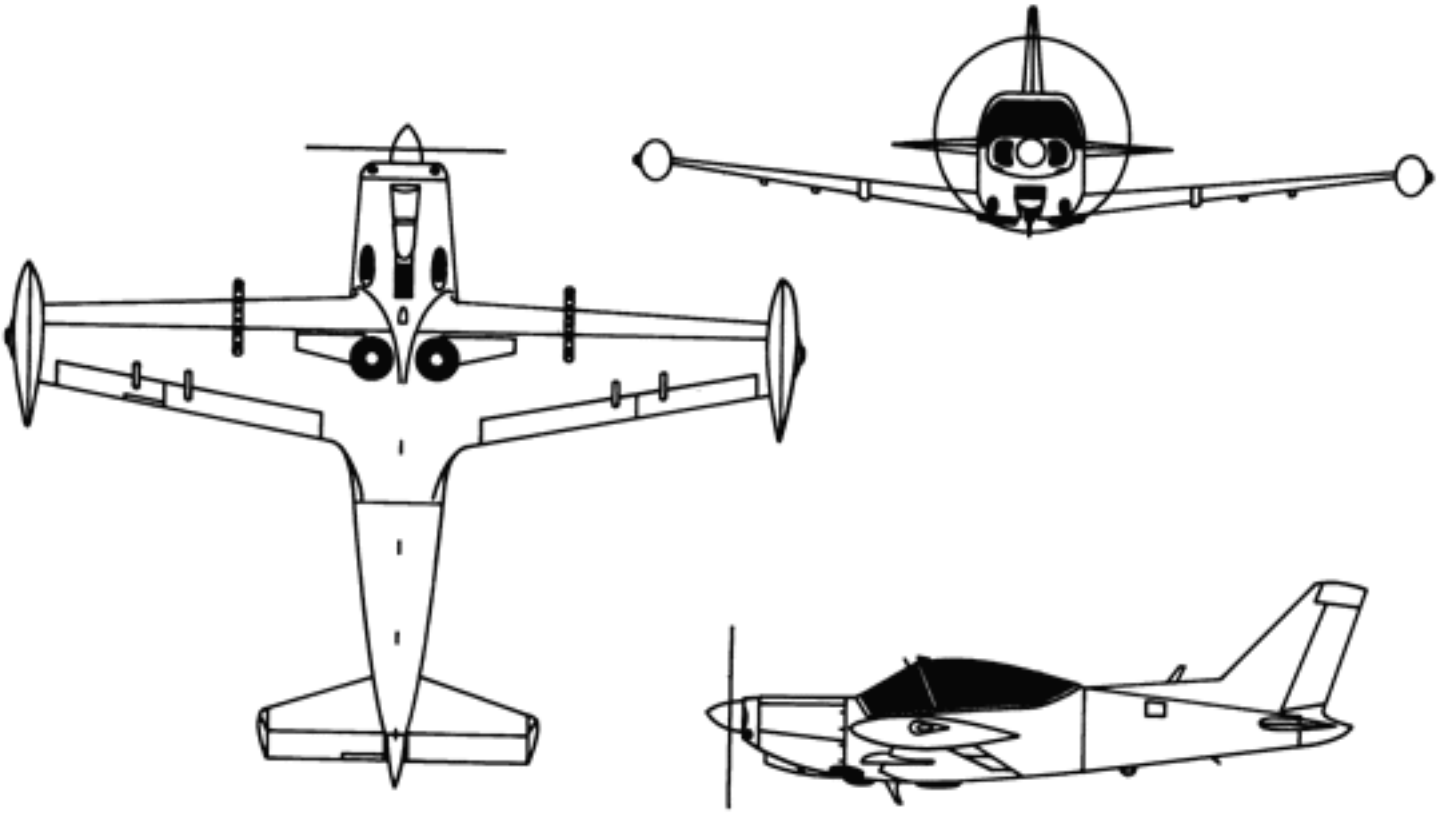
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered. Missiles are usually mounted at the wing tips.
Engine(s). One turbojet in the body. Semicircular air intakes alongside the body forward of the wing roots. Single exhaust.
Fuselage. Long, slender, pointed nose and a blunt tail. Two small belly fins under the tail section. Bubble canopy.
Tail. Swept-back and tapered fin with a blunt tip. Flats are mid-mounted on the fuselage, swept-back, and tapered with blunt tips.

USER COUNTRIES

France, Greece, Iran, Iraq, Jordan, Kuwait, Libya, Morocco, Qatar, South Africa, Spain.

SF.260W (SIAI-MARCHETTI)



GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. O-1 Bird Dog, PC-7.
Crew. One; trainer--either two or three.
Role. Trainer, light-attack.
Armament. Machine guns, bombs, rockets.
Dimensions. Length: 23 ft, 3 in (7 m). Span: 27 ft, 5 in (8.36 m).

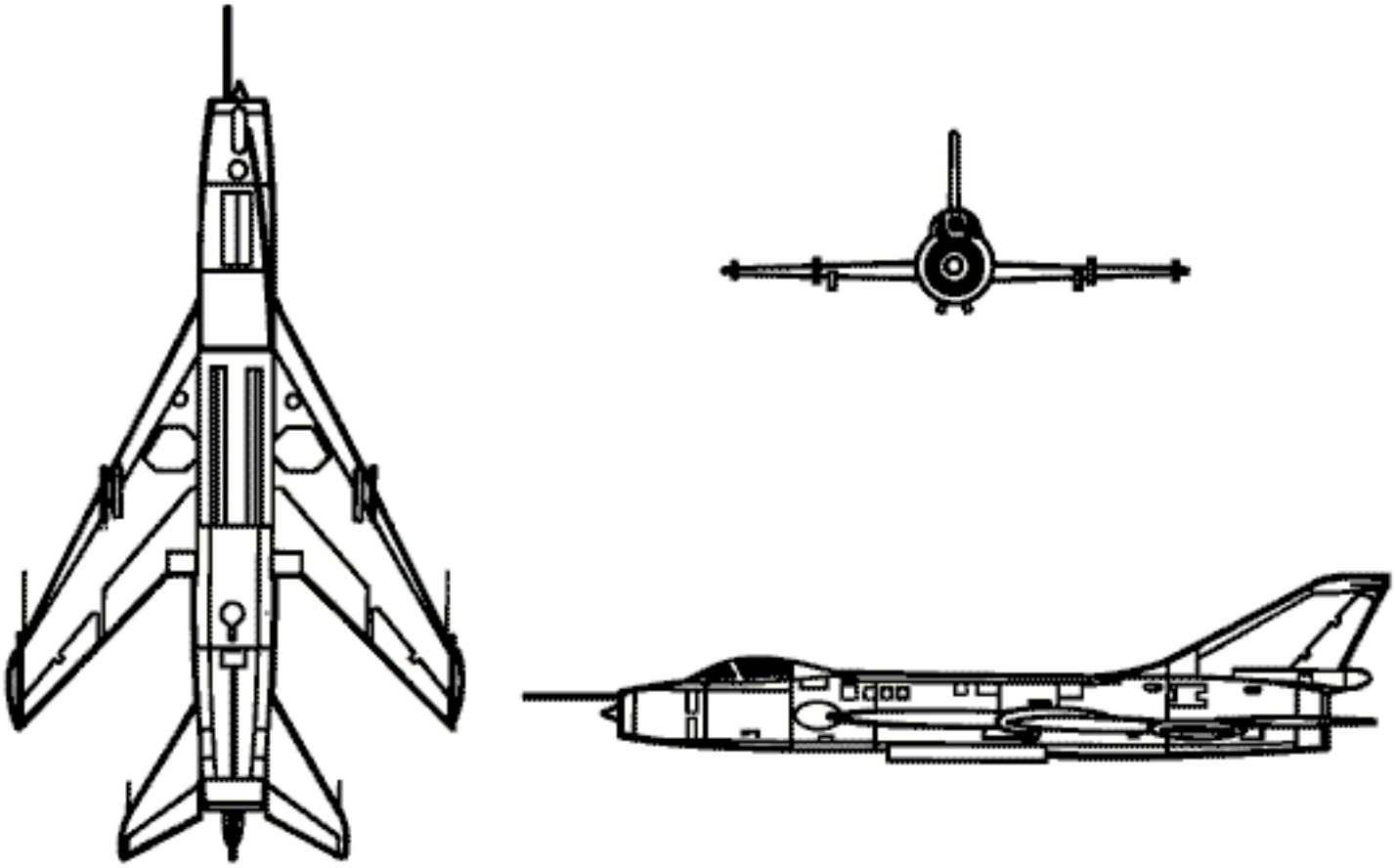
WEFT DESCRIPTION

Wings. Low-mounted and forward-tapered with fuel tanks mounted on the square tips.
Engine(s). One piston engine mounted in the nose section.
Fuselage. Oval, tapers to the rear. Long, bubble canopy.
Tail. Flats mid-mounted on the fuselage and back-tapered with blunt tips. Fin is swept-back and tapered with a square tip.

USER COUNTRIES

Brunai, Burkina Faso, Burundi, Chad, Libya, Nicaragua, Philippines, Singapore, Sri Lanka, Tunisia, United Arab Emirates, Zambia.

Su-7B FITTER A (SUKHOI)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Lightning, F-100 Super Sabre, MiG-21 Fishbed.
Crew. One.
Role. Ground-attack.
Armament. Two 30-mm cannon, rockets, bombs.
Dimensions. Length: 57 ft (17.38 m). Span: 29 ft, 3 in (9 m).

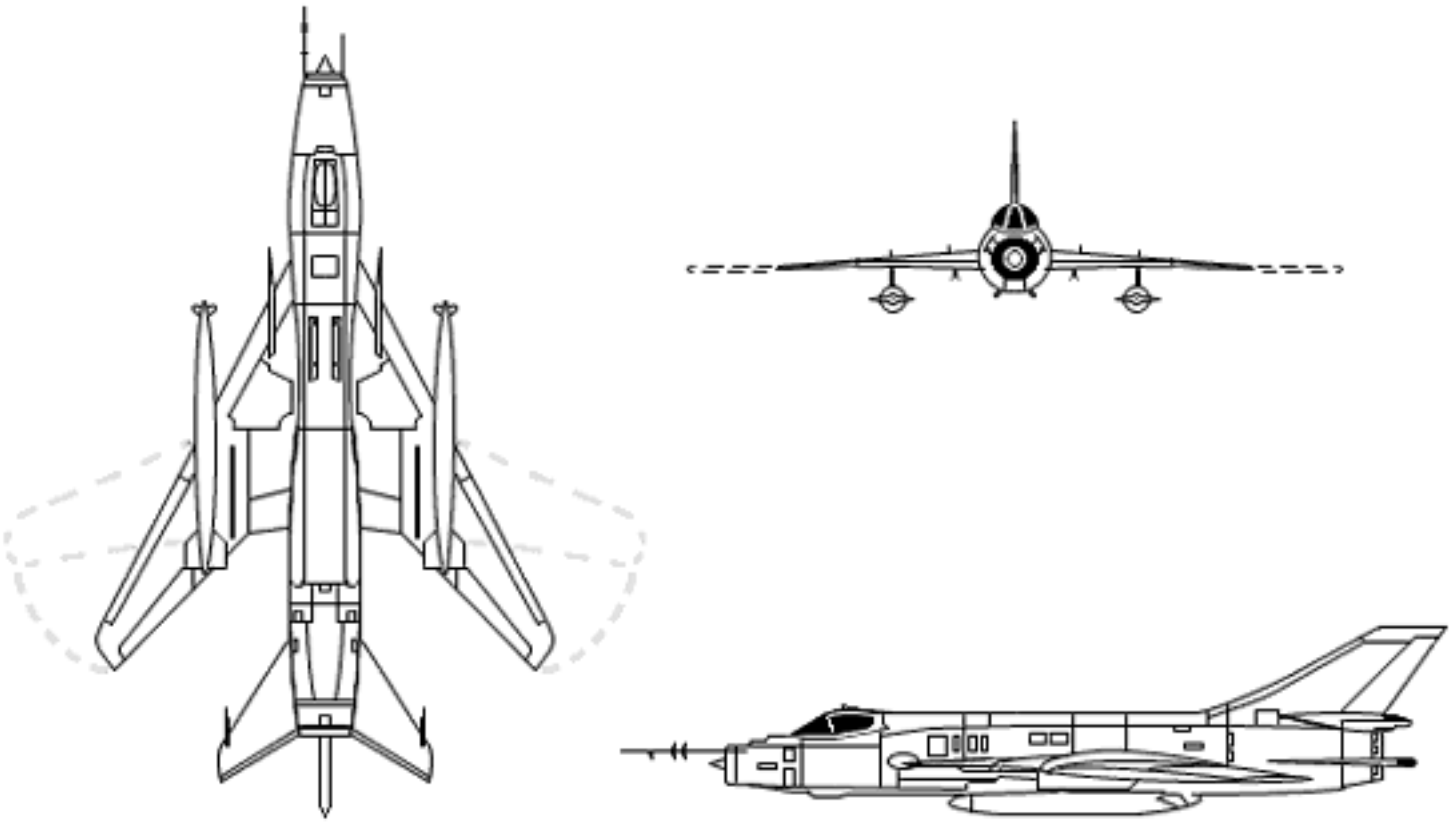
WEFT DESCRIPTION

Wings. Mid- to low-mounted (wings are mounted below center of aircraft) with wide wing roots, swept-back, and tapered with blunt tips.
Engine(s). One in the body. Circular air intake in the nose. Large, single exhaust.
Fuselage. Long, tubular body with blunt nose and rear. Large, bubble canopy.
Tail. Swept-back and tapered tail fin with a blunt tip. Swept-back and tapered flats mid- to low-mounted on the fuselage.

USER COUNTRIES

Afghanistan, Algeria, Bangladesh, Czech Republic, North Korea, South Yemen.

Su-17,-20,-22 FITTER (SUKHOI)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-21 Fishbed, Su-7 Fitter, A-7 Corsair II, G.91Y.
Crew. One.
Role. Ground-attack.
Armament. Cannon, rockets, missiles, bombs.
Dimensions. Length: 61 ft, 6 in (18.76 m). Span: 45 ft (13.8 m).

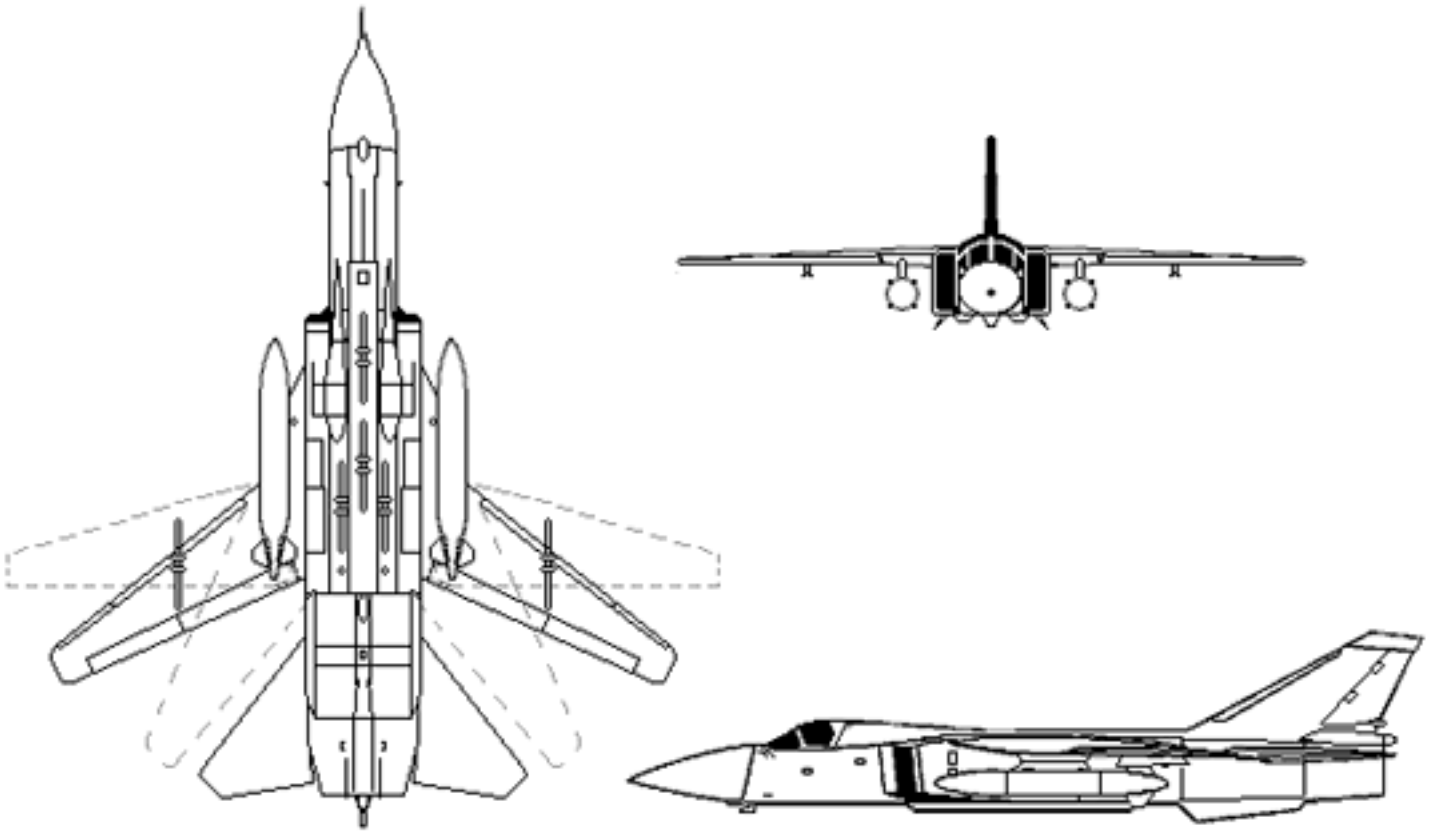
WEFT DESCRIPTION

Wings. Mid- to low-mounted (wings are mounted below the center), variable, swept-back, and tapered with blunt tips. Wide wing roots.
Engine(s). One turbojet in the fuselage. Circular air intake in the nose. Large, single exhaust.
Fuselage. Long, tubular with blunt nose and rear section. Large bubble canopy. Prominent dorsal spine on top of the body from the cockpit to the tail fin.
Tail. Swept-back and tapered fin with a square tip. Flats mid- to low-mounted on the fuselage swept-back and tapered.

USER COUNTRIES

Afghanistan, Algeria, Azerbaijan, Belarus, Bulgaria, CIS, Czech Republic, Germany, Hungary, Iran, Iraq, Libya, North Yemen, Peru, Poland, Slovakia, South Yemen, Syria, Vietnam.

Su-24 FENCER (SUKHOI)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Tornado, F-111, F-14 Tomcat, F-15 Eagle, MiG-23/-27 Flogger.
Crew. Two.
Role. All-weather attack, fighter-bomber, strike.
Armament. Cannon, missiles, bombs.
Dimensions. Length: 69 ft, 6 in (20 m). Span: 56 ft, 6 in (17.26 m).

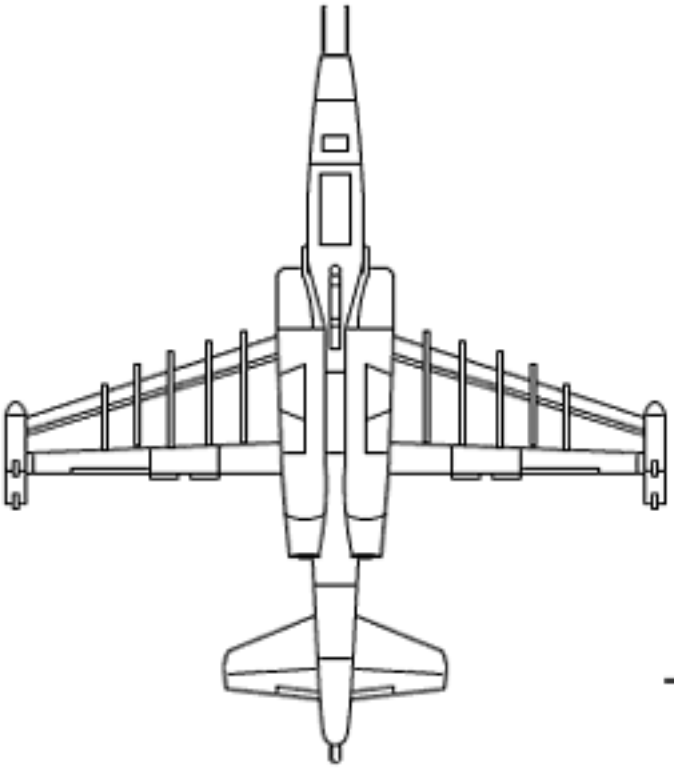
WEFT DESCRIPTION

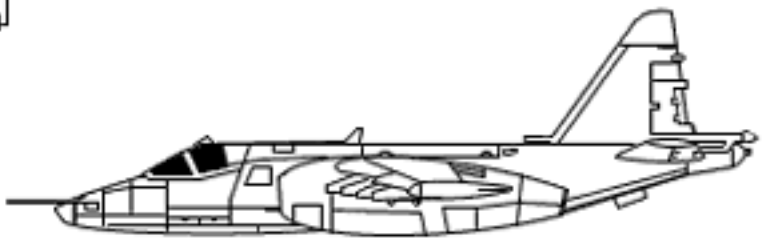
Wings. High-mounted, variable, swept-back, and tapered.
Engine(s). Twin turbofans. Air intakes are tapered away from the body, rectangular-shaped, and mounted on the body forward of the wings' leading edges. Twin exhausts.
Fuselage. Long, slender, with pointed, solid nose, and rectangular-shaped body from the air intakes to the exhausts. Two belly fins; four pylons. Bubble canopy. Dorsal spine extends from the cockpit to the tail.
Tail. Fin swept-back and tapered with square tip. Flats are high-mounted on the fuselage, swept-back, and tapered with angular tips.

USER COUNTRIES

Azerbaijan, Belarus, CIS, Iran, Kazakhstan, Libya, Syria, Ukraine.

Su-25 FROGFOOT (SUKHOI)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. A-6 Intruder, Magister, Alpha Jet, Jaguar, AMX, A-10A Thunderbolt II.
Crew. One.
Role. CAS, ground-attack.
Armament. Cannon missiles, rockets, bombs.
Dimensions. Length: 47 ft, 6 in (14.6 m). Span: 50 ft, 10 in (15.6 m).

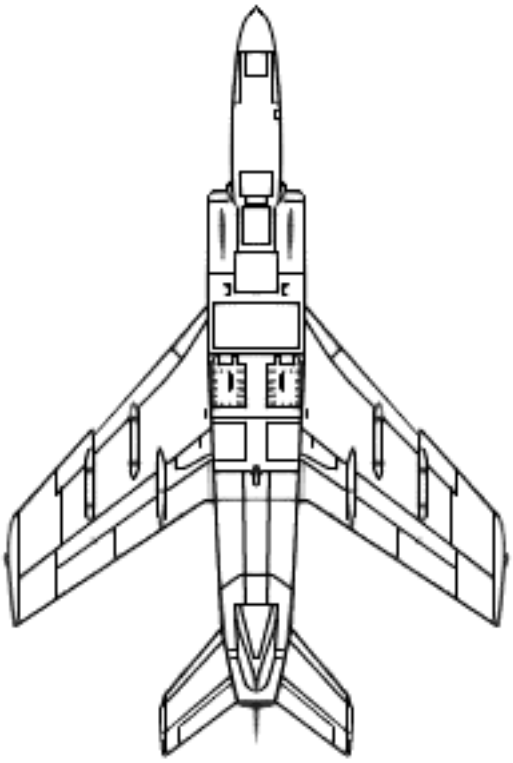
WEFT DESCRIPTION

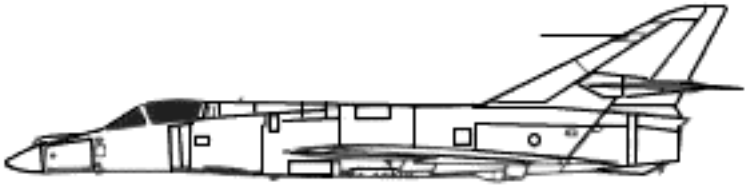
Wings. High-mounted and back-tapered with straight trailing edges. Pods mounted at the square tips.
Engine(s). Two turbojets mounted alongside the body under the wings. Semicircular air intakes forward of the wings' leading edges. Exhausts to the rear of the wings' trailing edges.
Fuselage. Long, slender, rounded nose. Body tapers to the rear section that overhangs the exhausts. Stepped canopy.
Tail. Swept-back and tapered fin with a square tip. Flats mid-mounted on the fuselage, unequally tapered with blunt tips.

USER COUNTRIES

Angola, Azerbaijan, Belarus, Bulgaria, CIS, Czech Republic, Iraq, Georgia, Hungary, Iran, North Korea, Slovakia, Ukraine.

SUPER ETENDARD (DASSAULT-BREGUET)





GENERAL DATA

Country of Origin. France.
Similar Aircraft. Fantan A, Mitsubishi F-1, Mirage F1, Yak-38 Forger.
Crew. One.
Role. Strike, fighter.
Armament. Missiles, cannon, bombs.
Dimensions. Length: 47 ft (14.34 m). Span: 31 ft, 6 in (9.62 m).

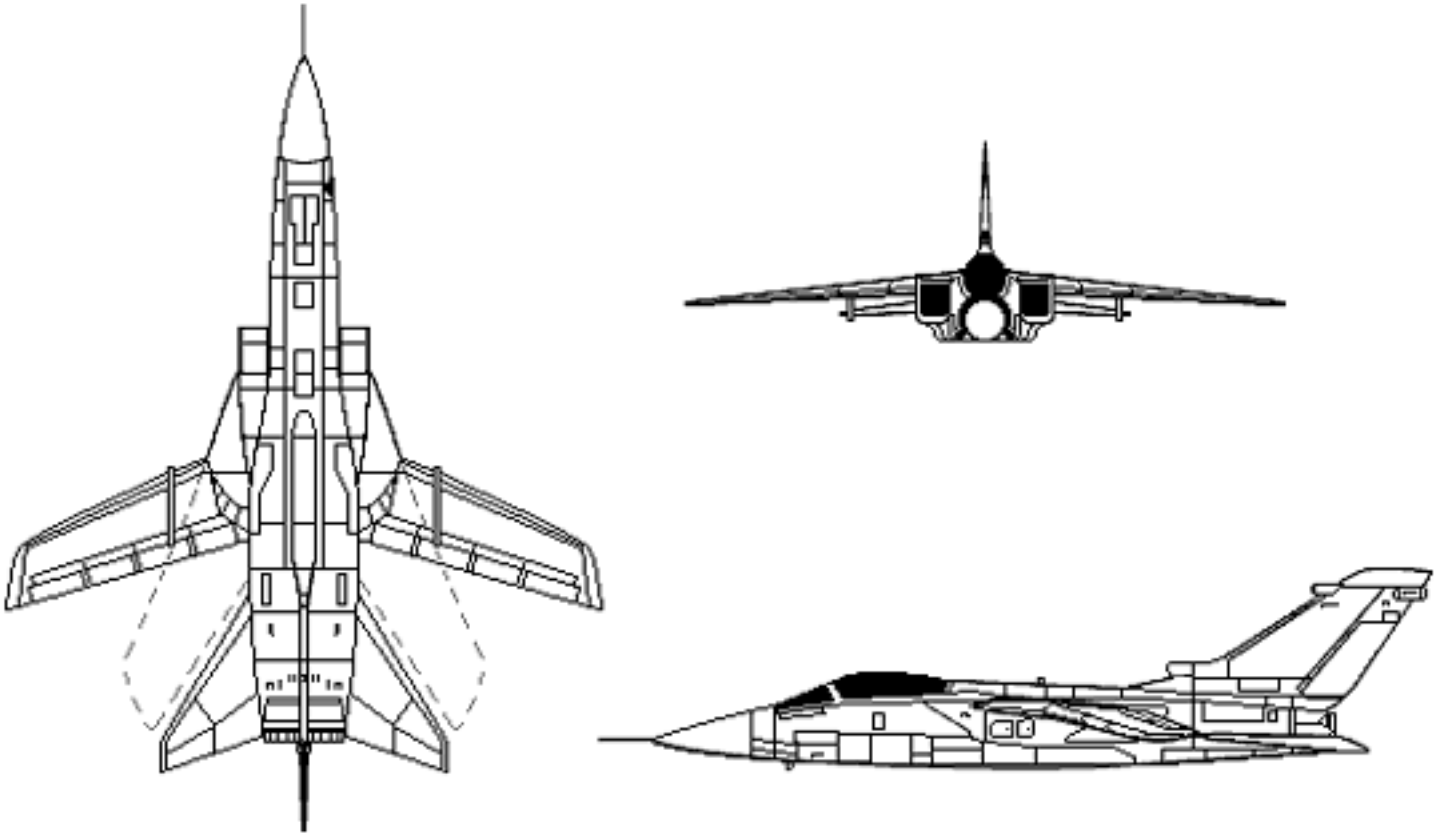
WEFT DESCRIPTION

Wings. Mid-mounted, swept-back, and tapered with blunt tips. Sawtooth in the leading edges.
Engine(s). One turbojet inside the body. Semicircular air intakes below the canopy. Single exhaust.
Fuselage. Long, pointed nose. Body bulges at the air intakes and tapers to the rear. Bubble canopy well forward on the nose. Dorsal spine extends from the cockpit to midbody.
Tail. Large, swept-back, and tapered tail fin with curved tip. Flats are low- to mid-mounted on the tail fin, swept-back, and tapered with blunt tips.

USER COUNTRY

Argentina, France.

TORNADO IDS (AERITALIA, MBB, BAe)



GENERAL DATA

Countries of Origin. Italy, Germany, UK.
Similar Aircraft. Su-24 Fencer, F-14 Tomcat, F-15 Eagle, MiG-23/-27 Flogger, F-111.
Crew. Two.
Role. Interdictor strike.
Armament. Missiles, bombs, rockets, cannon.
Dimensions. Length: 55 ft, 9 in (16.8 m). Span: 45 ft, 7 in (14 m).

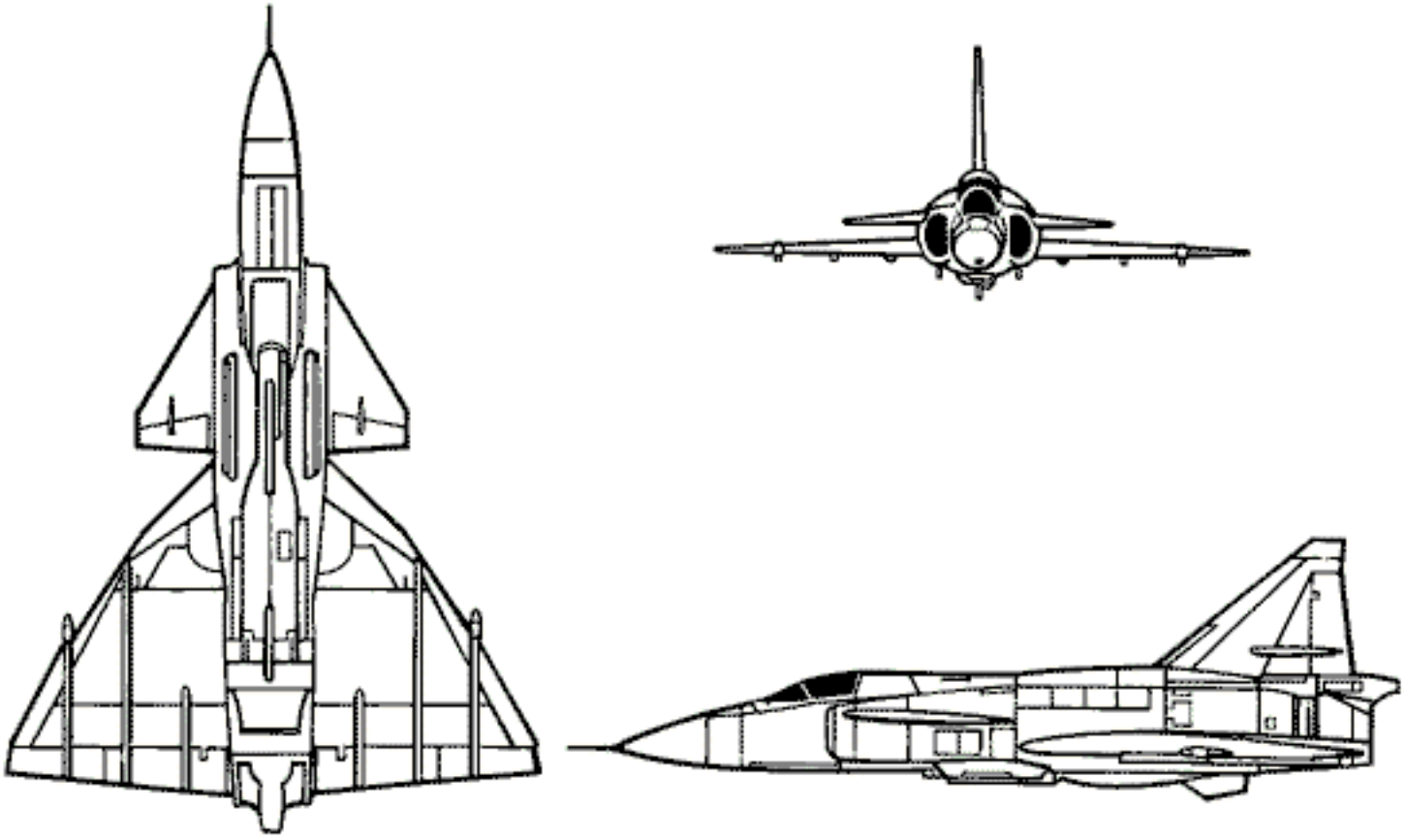
WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with angular blunt tips.
Engine(s). Two turbofans in body. Air intakes are diagonal and box-like alongside the fuselage forward of the wing roots. Twin exhausts.
Fuselage. Solid needle nose. Body thickens at the midsection and tapers to the tail section. Bubble canopy.
Tail. Tall, swept-back, and tapered fin with blunt tip and a step in the leading edge. Flats are large, mid-mounted on the body, swept-back, and tapered with angular blunt tips.

USER COUNTRIES

Germany, Italy, Saudi Arabia, UK.

VIGGEN AJ-37 (SAAB)



GENERAL DATA

Country of Origin. Sweden.
Similar Aircraft. Kfir, Mirage III/5.
Crew. One; trainer--two.
Role. Multirole, fighter.
Armament. Cannon, gun pods, missiles, rockets, bombs.
Dimensions. Length: 53 ft, 6 in (16.4 m). Span: 34 ft, 9 in (10.7 m).

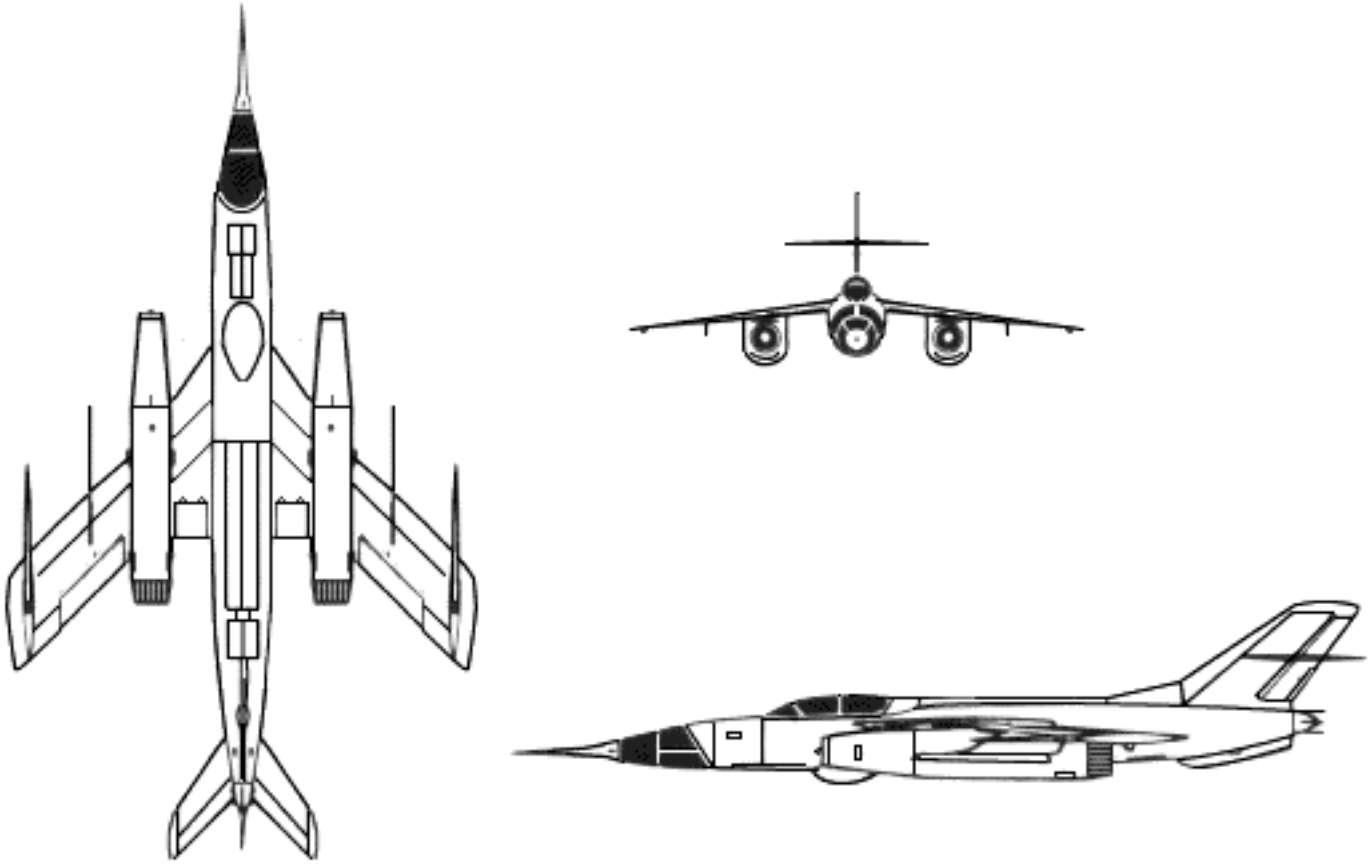
WEFT DESCRIPTION

Wings. Main wings are low-mounted, delta-shaped, extending from the body midsection to the exhaust. Small, clipped delta wings forward of the main wings and high-mounted on the body.
Engine(s). One turbofan in the body. Semicircular air intakes just forward and below the secondary wings. Large, single exhaust.
Fuselage. Short and wide with pointed, solid nose. Bubble canopy. Small belly fin.
Tail. No tail flats. Large, unequally tapered fin with a small, clipped tip.

USER COUNTRY

Sweden.

Yak-28 BREWER (YAKOVLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Il-28 Beagle.
Crew. Two.
Role. Fighter-bomber, reconnaissance, ECM.
Armament. Bombs, cannons, rockets.
Dimensions. Length: 70 ft (21.36 m). Span: 41 ft (12.06 m).

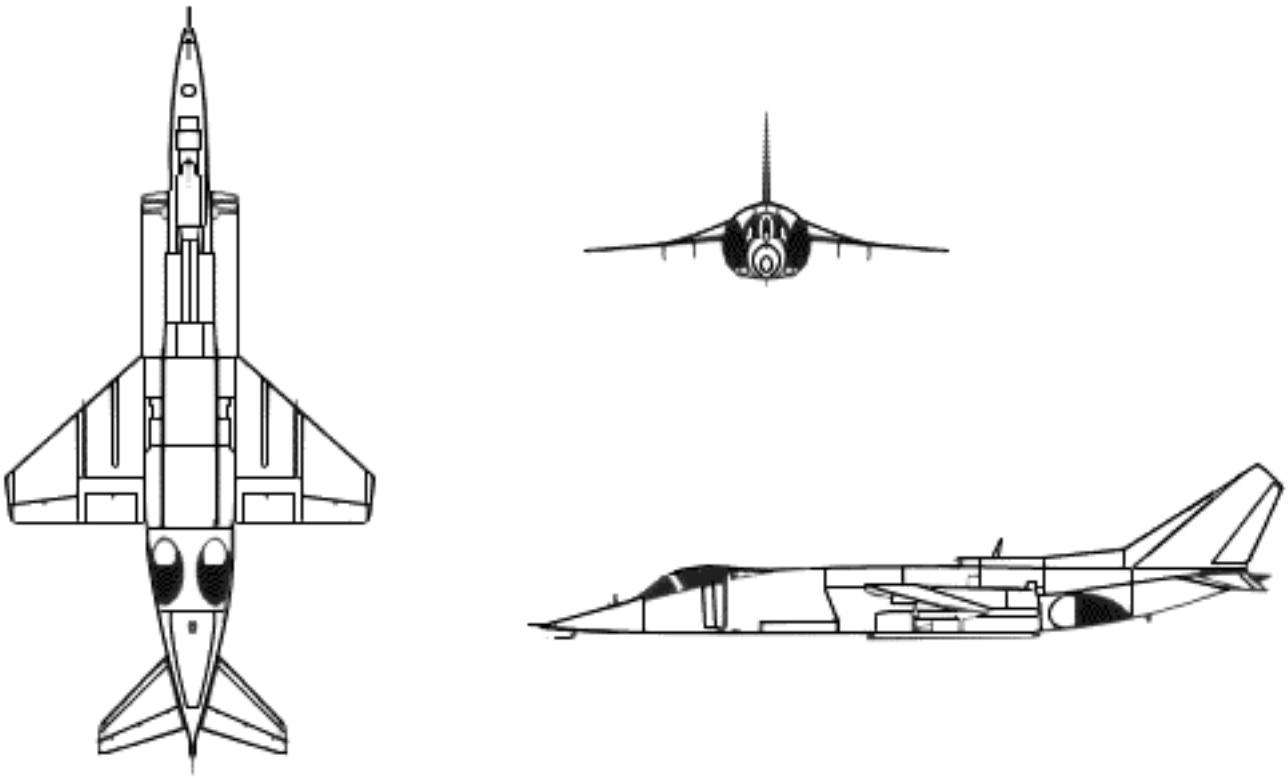
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and untapered from the engines to the large blunt tips. Wide wing roots.
Engine(s). Two turbojets in pods under the wings. Pods extend well beyond the wings' leading and trailing edges.
Fuselage. Long with pointed, glazed nose and is tapered to the rear section. Bubble canopy. Belly fin under the rear section.
Tail. Fin swept-back and tapered with a blunt tip. Tail flats mid-mounted on the tail fin, swept-back, and tapered with blunt tips.

USER COUNTRY

CIS, Ukraine.

Yak-38 FORGER (YAKOVLEV)



GENERAL DATA

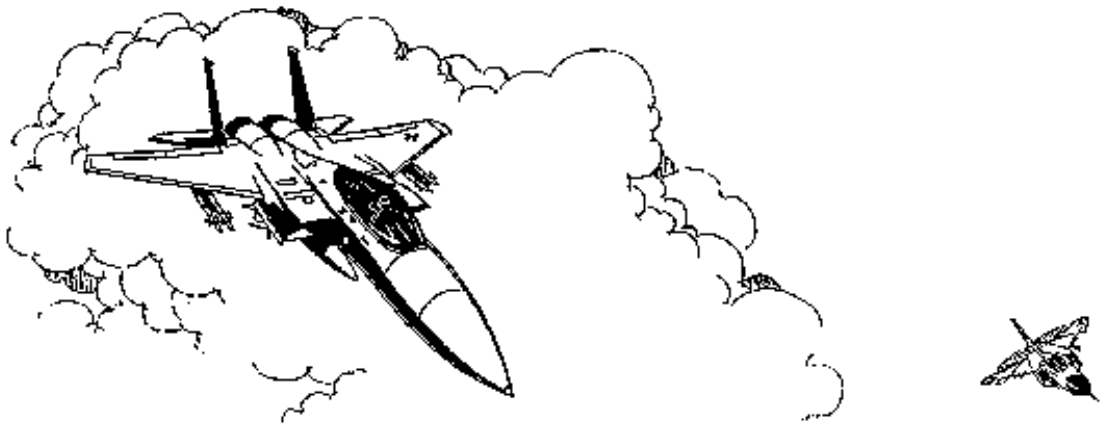
Country of Origin. CIS (formerly USSR).
Similar Aircraft. AV-8B Harrier II, Super Etendard, Fantan A, Mirage F1.
Crew. One; Forger B--two.
Role. VSTOL, fighter, strike, attack.
Armament. Cannon, bombs, rockets, missiles.
Dimensions. Length: 52 ft, 6 in (16 m). Span: 24 ft, 7 in (7.5 m).

WEFT DESCRIPTION

Wings. Mid-mounted, delta-shaped with blunt tips and a negative slant.
Engine(s). One turbo and two lift jets. Two exhausts on the bottom of the rear fuselage. Large, semicircular air intakes below the cockpit well forward of the wings.
Fuselage. Long with pointed nose and tapered tail section. Bubble canopy.
Tail. Swept-back and tapered tail fin with square angular tip and a small step in the leading edge. Flats are mid-mounted on the body, swept-back, and tapered with a negative slant.

USER COUNTRY

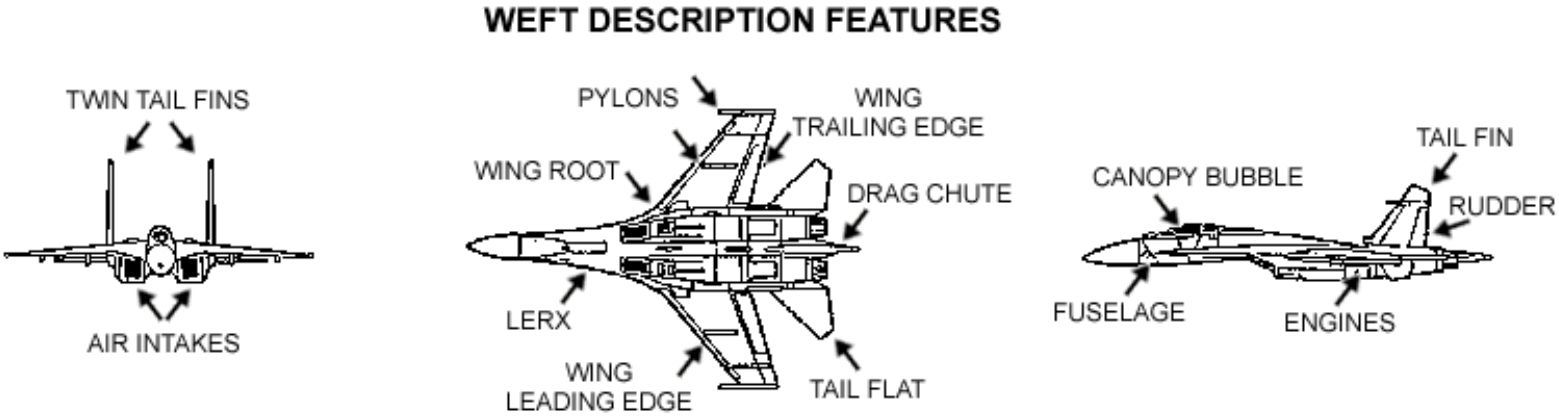
CIS.



CHAPTER 6

Air Superiority and Interceptor Aircraft

The normal operating ceiling for most of these aircraft will generally keep them out of range of individual or crew-served weapons, although some of the aircraft have ground-attack capabilities. Their inclusion in this manual is for soldier interest and to cover likely aircraft present in a theater of operation.
For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. Line drawings are not to scale. The following illustration shows fighter aircraft WEFT description features.

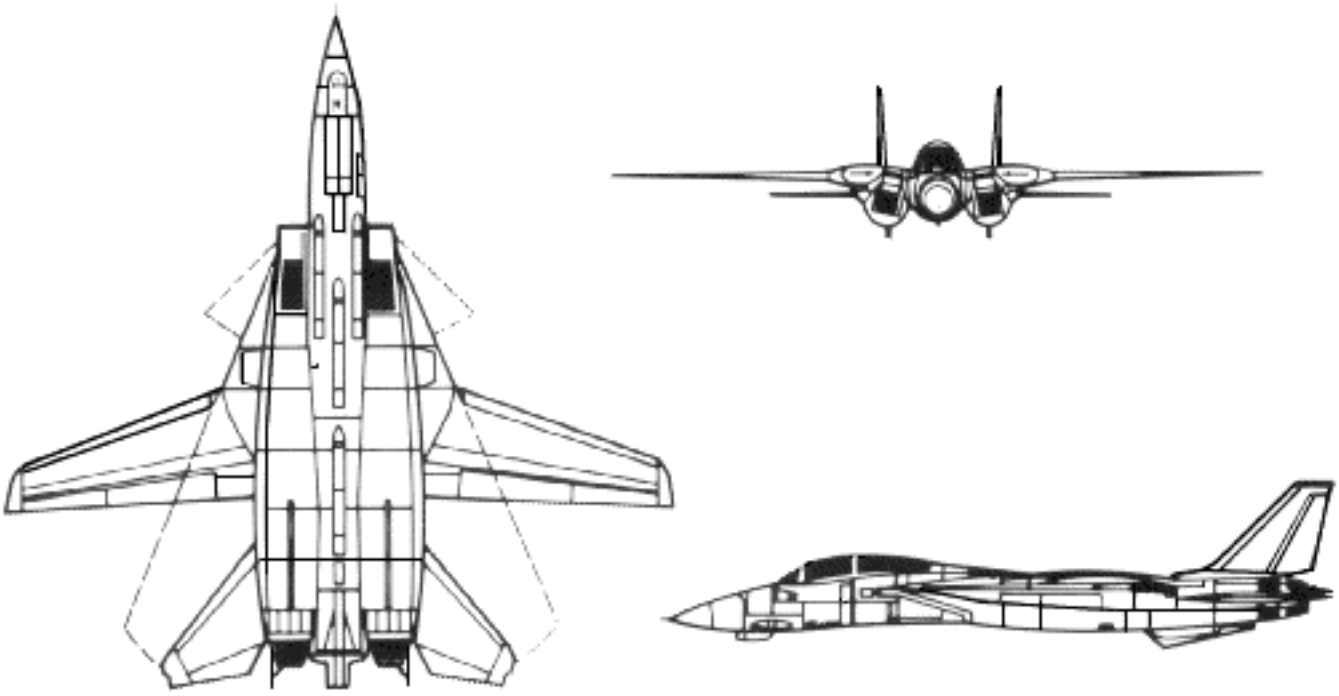


Chapter 6 Aircraft List

F-14 Tomcat	MiG-25 Foxbat	Su-15 Flagon

F-15 Eagle	MiG-31 Foxhound	Su-27 Flanker
MiG-19 Farmer	Mirage 2000	Tornado ADV
MiG-23 Flogger B	.	.

F-14 TOMCAT (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-15 Eagle, Su-24 Fencer, Tornado, Su-27 Flanker, MiG-29 Fulcrum.
Crew. Two.
Role. Air superiority fighter, interceptor.
Armament. Missiles, cannon.
Dimensions. Length: 62 ft (19 m). Span: 64 ft (19.54 m).

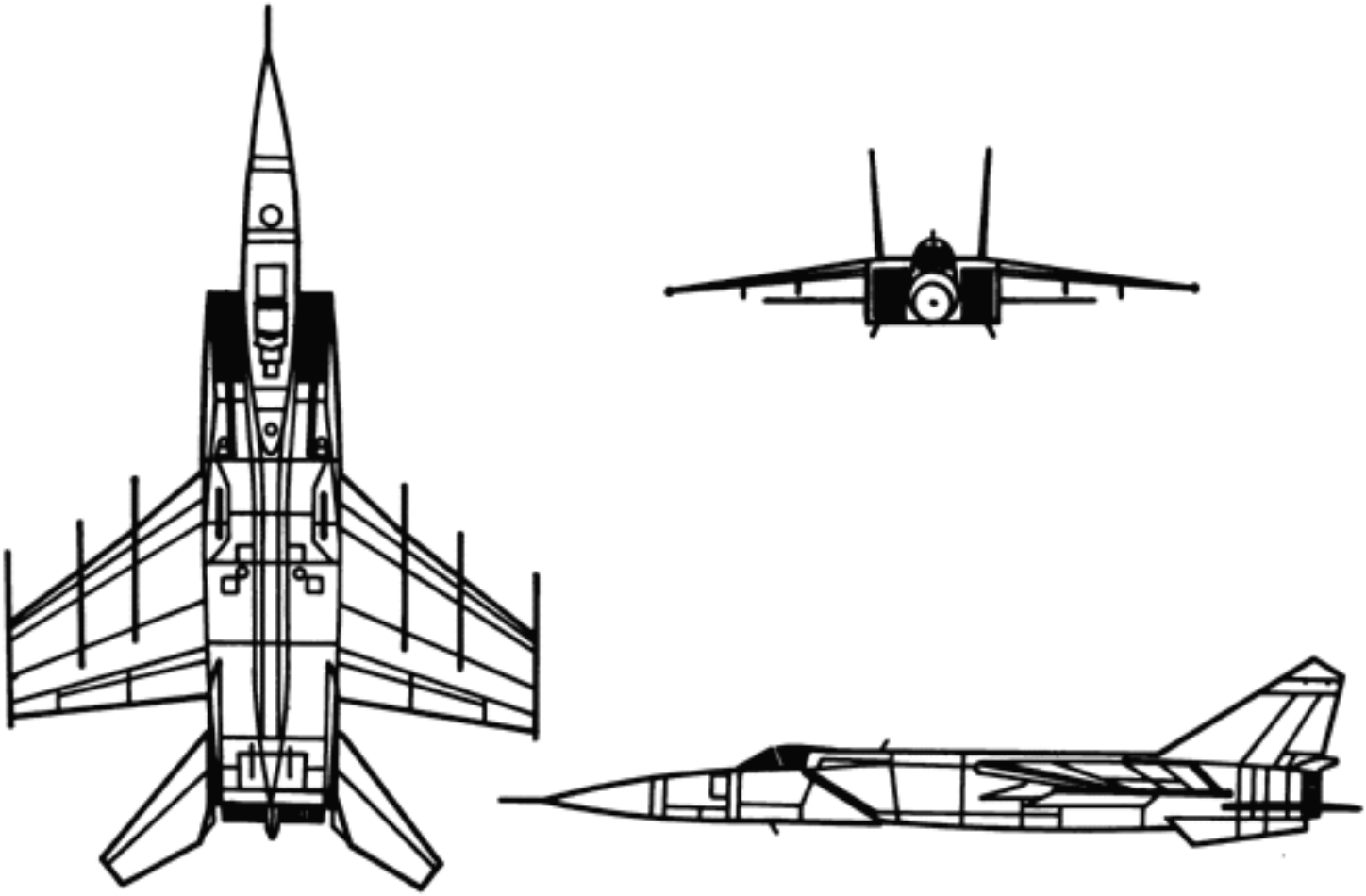
WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with curved tips.
Engine(s). Two turbofans in the fuselage. Diagonally shaped, box-like air intakes alongside the fuselage. Dual exhausts.
Fuselage. Long, slender, and box-like from the air intakes to the rear section. Pointed nose. Bubble canopy.
Tail. Twin tail fins, swept-back, tapered, and slanted outward. Flats are mid-mounted on the fuselage, swept-back, and tapered.

USER COUNTRIES

Iran, USA.

MiG-25 FOXBAT (MIKOYAN-GUREVICH)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. F-14 Tomcat, F-15 Eagle, MiG-31 Foxhound.
Crew. One.
Role. Intercepter, reconnaissance.
Armament. Air-to-air missiles.
Dimensions. Length: 70 ft (21.34 m). Span: 41 ft (12.6 m).

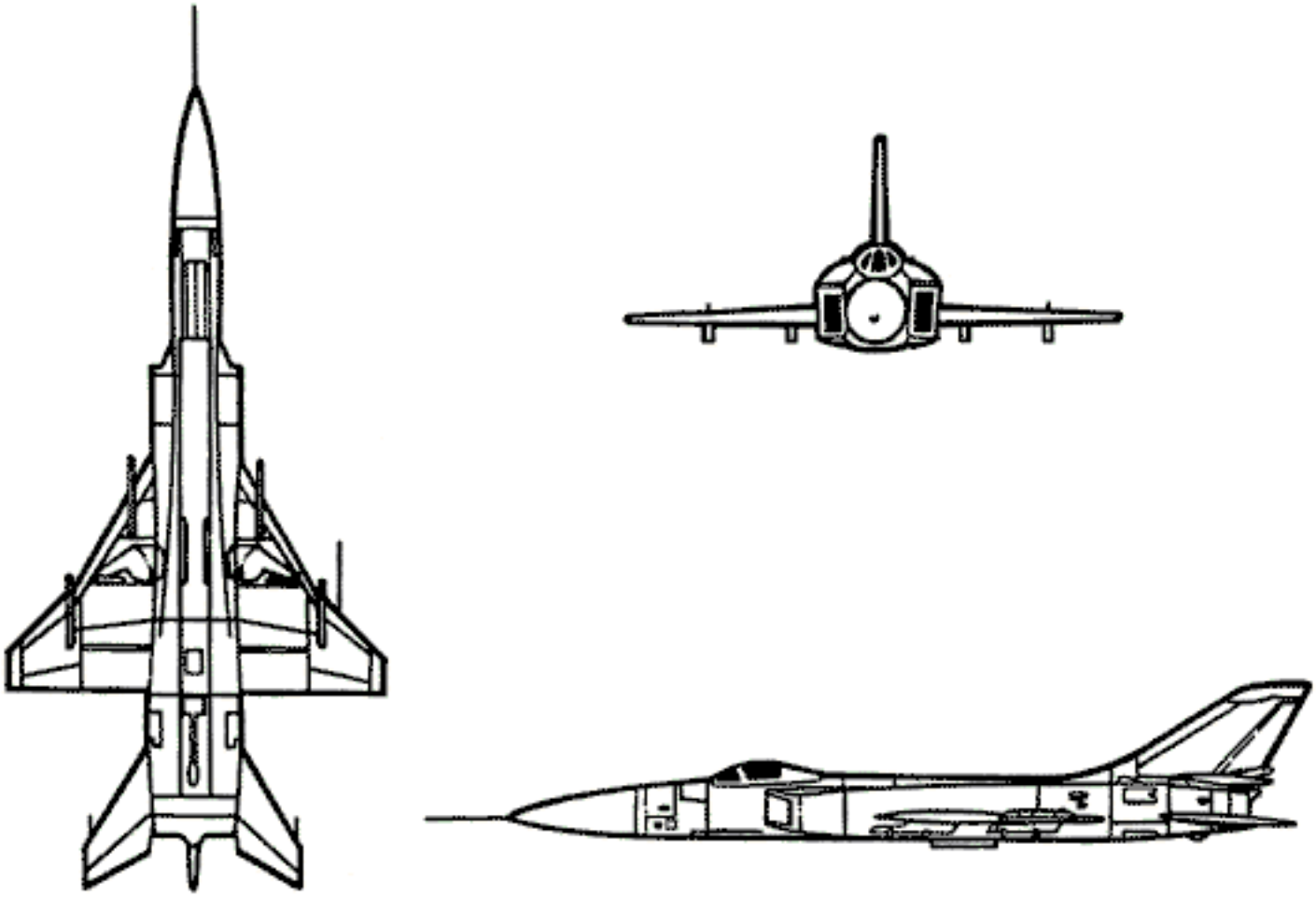
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with square tips.
Engine(s). Two turbojets. Large rectangular air intakes below the canopy and forward of the wing roots. Dual exhaust.
Fuselage. Long and slender with solid, pointed nose. Box-like from the air intakes to rear section. Bubble canopy.
Tail. Twin, sweptback, and tapered fins with angular tips. Flats mid- to low-mounted on fuselage, swept-back, and tapered with angular tips.

USER COUNTRIES

Algeria, Azerbaijan, Belarus, Bulgaria, CIS, Iraq, Syria, Ukraine.

Su-15 FLAGON (SUKHOI)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-21 Fishbed, Super Etendard.
Crew. One; Flagon C--two.
Role. Interceptor, air superiority.
Armament. Missiles, gunpack.
Dimensions. Length: 68 ft (20.7 m). Span: 34 ft, 5 in (10.5 m).

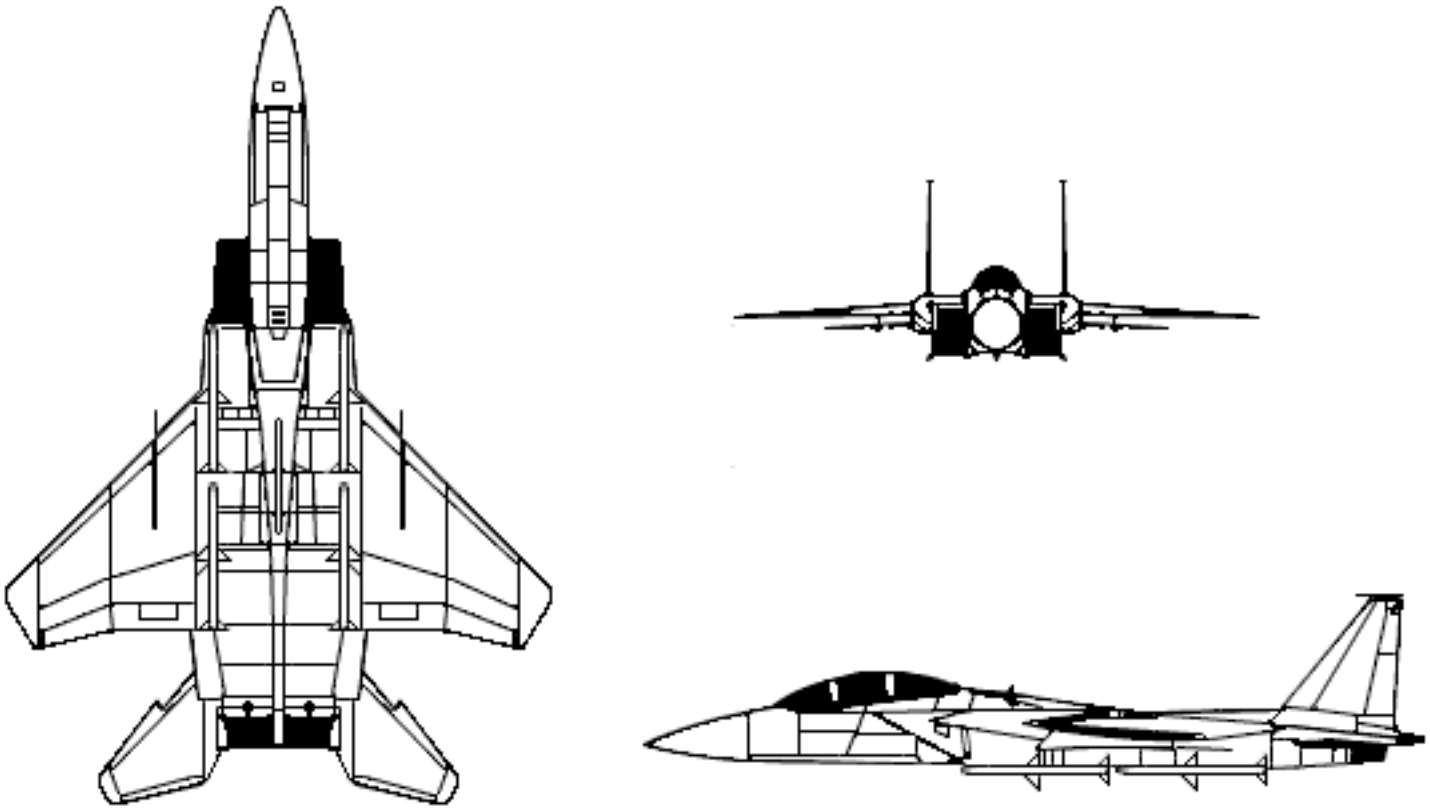
WEFT DESCRIPTION

Wings. Mid-mounted delta with square tips.
Engine(s). Two turbojets in the fuselage. Two exhausts.
Fuselage. Rectangular from the air intakes to the tail. Bullet-shaped nose and a bubble canopy.
Tail. Swept-back and tapered fin with a square tip. Flats are swept-back, tapered, and mid-mounted on the fuselage.

USER COUNTRY

CIS, Georgia, Ukraine.

F-15 EAGLE (McDONNELL DOUGLAS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-14 Tomcat, Su-24 Fencer, Tornado, MiG-29 Fulcrum, Su-27 Flanker.
Crew. One; trainer--two.
Role. Air superiority fighter, interceptor.
Armament. Missiles, cannon.
Dimensions. Length: 63 ft, 9 in (19.45 m). Span: 42 ft, 9 in (13.05 m).

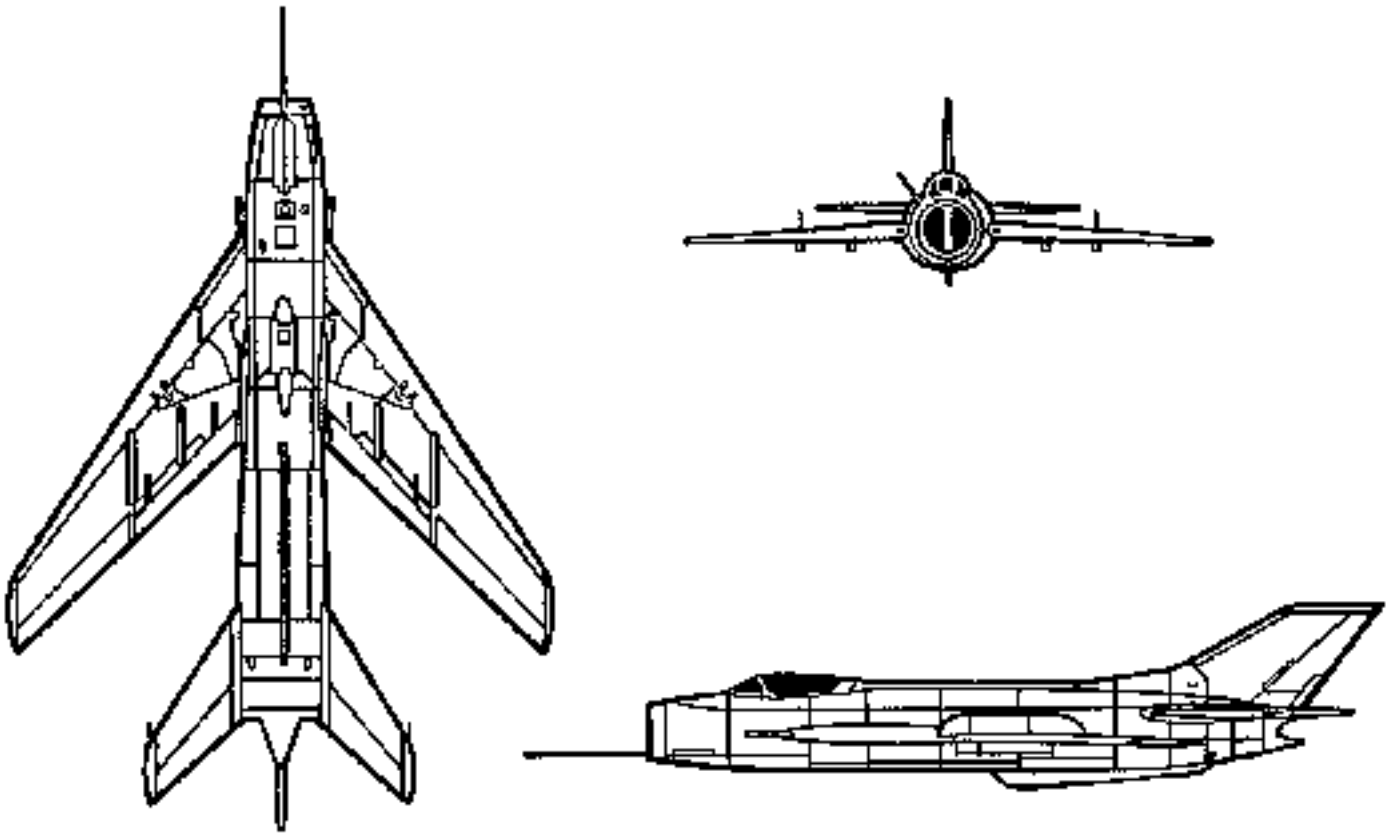
WEFT DESCRIPTION

Wings. High-mounted, semidelta with angular, blunt tips.
Engine(s). Two mounted in the rear. Diagonally-shaped, box-like air intakes alongside the fuselage. Dual exhausts.
Fuselage. Long, pointed nose and a bubble canopy. Large, box-like center section that tapers slightly to the front and rear.
Tail. Two fins with tapered leading edges, straight trailing edges, and square tips. Flats mid-mounted on the fuselage, swept-back, and tapered with angular, blunt tips, and a large sawtooth in the leading edges.

USER COUNTRIES

Israel, Japan, Saudi Arabia, USA.

MiG-19 FARMER (MIKOYAN-GUREVICH)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-17 Fresco.
Crew. One.
Role. Interceptor, capable of attacking ground targets.
Armament. Missiles, cannon, bombs.
Dimensions. Length: 42 ft, 11 in (13.1 m). Span: 29 ft, 6 in (9 m).

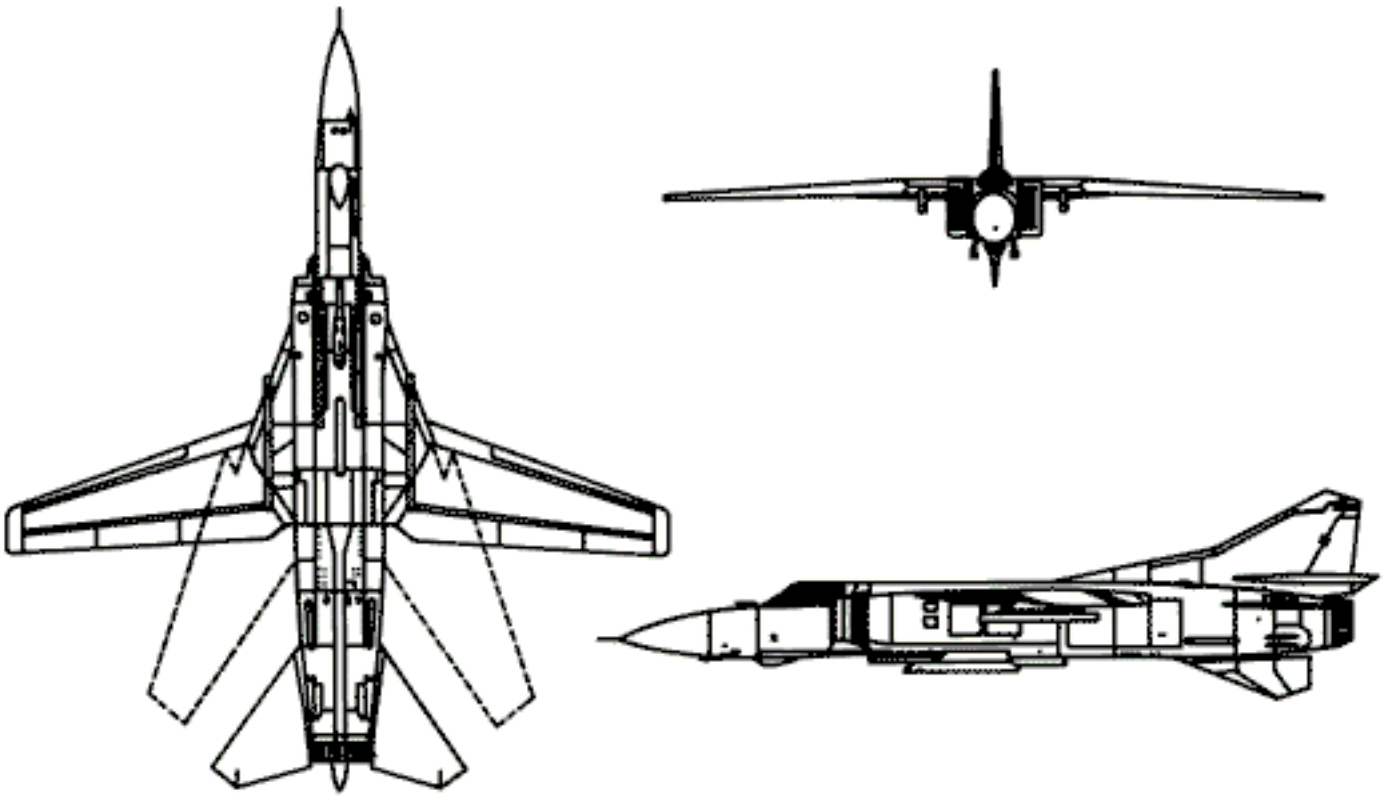
WEFT DESCRIPTION

Wings. Mid-mounted, swept-back, and tapered with blunt tips. Wing fences. Wide wing roots.
Engine(s). Two turbojets mounted inside the body. Single, round air intake in the nose. Dual exhausts.
Fuselage. Long, tube-shaped, and tapers slightly to the blunt nose and widens to the exhausts. Bubble canopy well forward on the nose.
Tail. Fin sharply swept-back and tapered with blunt tips. Flats high-mounted on the fuselage and swept-back with blunt tips.

USER COUNTRIES

Albania (J-6), Bangladesh (J-6), Burma (J-6), Cambodia (F-6), Cuba, Egypt, North Korea (J-6), Pakistan (J-6), People’s Republic of China (J-6), Sudan, Tanzania, Zambia.

MiG-23 FLOGGER B (MIKOYAN-GUREVICH)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-27 Flogger D, Tornado, Su-24 Fencer, F-111.
Crew. One; MiG-23U and -23C--two.
Role. Interceptor, fighter.
Armament. Missiles, cannon.
Dimensions. Length: 55 ft (16.6 m). Span: 46 ft, 9 in (14.26 m).

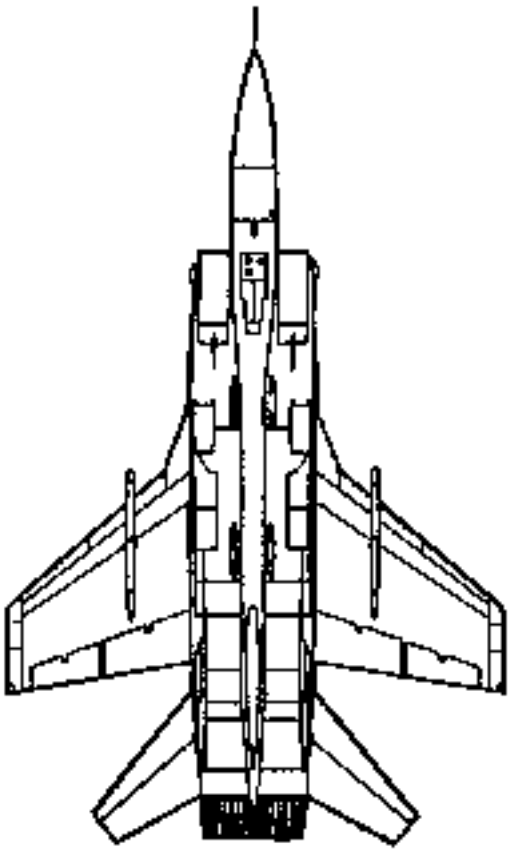
WEFT DESCRIPTION

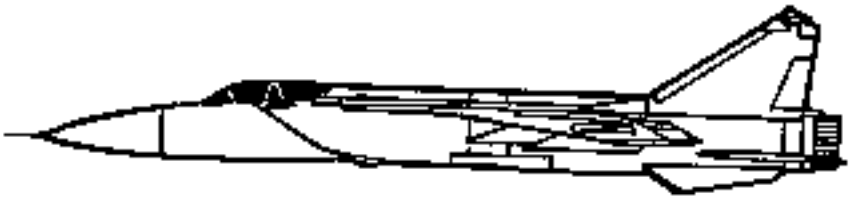
Wings. High-mounted, variable, swept-back, and tapered with blunt tips.
Engine(s). One turbofan inside the body. Rectangular, box-like air intakes forward of the wing roots. Single exhaust.
Fuselage. Long and tubular, except where intakes give a box-like appearance. Long, pointed nose. Stepped canopy. Large, swept-back, and tapered belly fin under the rear section.
Tail. Swept-back and tapered tail fin has a curved dorsal in the leading edge and an angular tip. Swept-back and tapered flats are high-mounted on the fuselage with angular tips.

USER COUNTRIES

Afghanistan, Algeria, Angola, Belarus, Bulgaria, CIS, Cuba, Czech Republic, Germany, Ethiopia, Hungary, India, Iraq, Kazakhstan, Libya, North Korea, Poland, Romania, South Yemen, Sudan, Syria, Ukraine, Vietnam.

MiG-31 FOXHOUND (MIKOYAN-GUREVICH)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. MiG-25 Foxbat, F-14 Tomcat, F-15 Eagle.
Crew. Two.
Role. Interceptor, air superiority.
Armament. Missiles, cannon.
Dimensions. Length: 70 ft, 5 in (21.5 m). Span: 45 ft, 9 in (14 m).

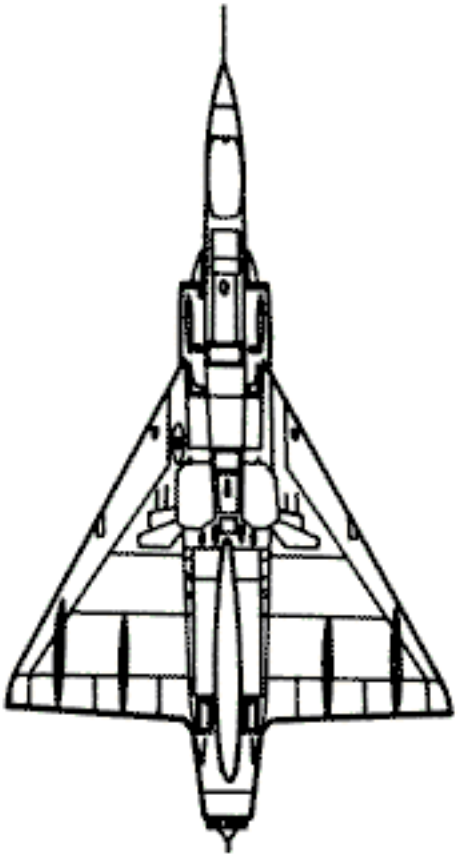
WEFT DESCRIPTION

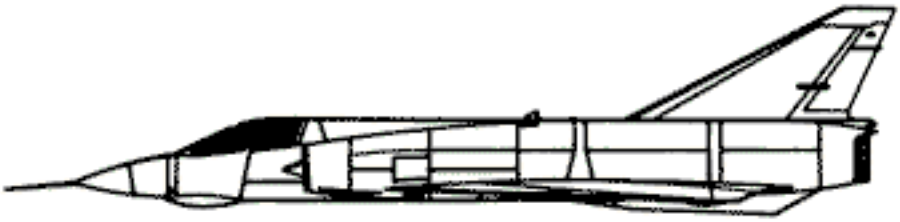
Wings. High-mounted and swept-back with square tips and a negative slant. Four underwing pylons.
Engine(s). Two turbofans in the fuselage. Rectangular and diagonal cut air intakes on sides of the fuselage. Exhausts extend beyond the tail plane.
Fuselage. Rectangular from the intakes to the exhausts. Long, pointed nose. Bubble canopy.
Tail. Fins back-tapered with angular tips and canted outward. Flats swept-back and tapered, mid- to low-mounted on the body.

USER COUNTRY

CIS.

MIRAGE 2000 (DASSAULT-BREGUET)





GENERAL DATA

Country of Origin. France.
Similar Aircraft. Mirage III/5, Kfir, Viggen.
Crew. One; Mirage 2000N--two.
Role. Interceptor.
Armament. Missiles, cannon.
Dimensions. Length: 50 ft, 3 in (15.3 m). Span: 29 ft, 5 in (9 m).

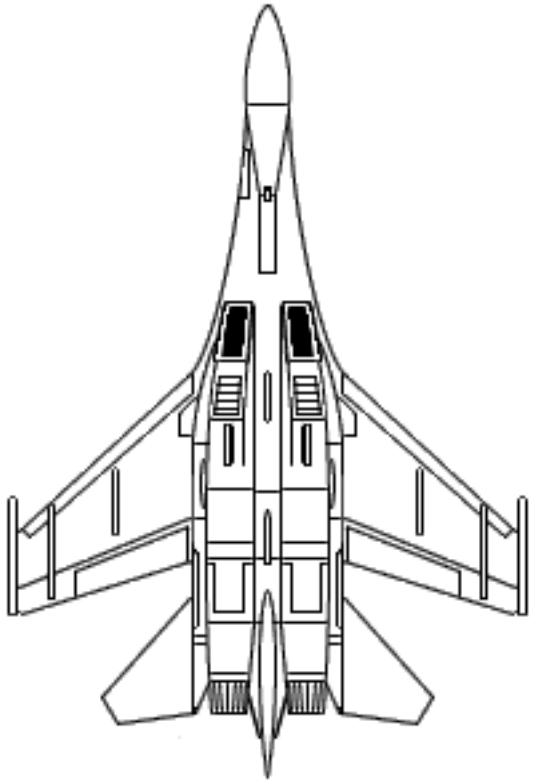
WEFT DESCRIPTION

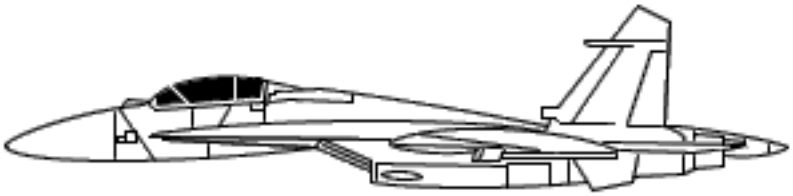
Wings. Low-mounted delta with clipped tips.
Engine(s). One turbofan mounted in the fuselage. Semicircular air intakes alongside the fuselage forward of the wings. Large, single exhaust protrudes past the tail.
Fuselage. Tube-shaped with pointed nose and a bubble canopy.
Tail. No tail flats. Fin is swept-back and tapered with a clipped tip.

USER COUNTRIES

Egypt, France, Greece, India, Peru, Quatar, United Arab Emirates.

Su-27 FLANKER (SUKHOI)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. F-15 Eagle, F-14 Tomcat, MiG-29 Fulcrum.
Crew. One.
Role. Interceptor, air superiority.
Armament. Missiles, cannon.
Dimensions. Length: 69 ft (21 m). Span: 47 ft, 6 in (14.5 m).

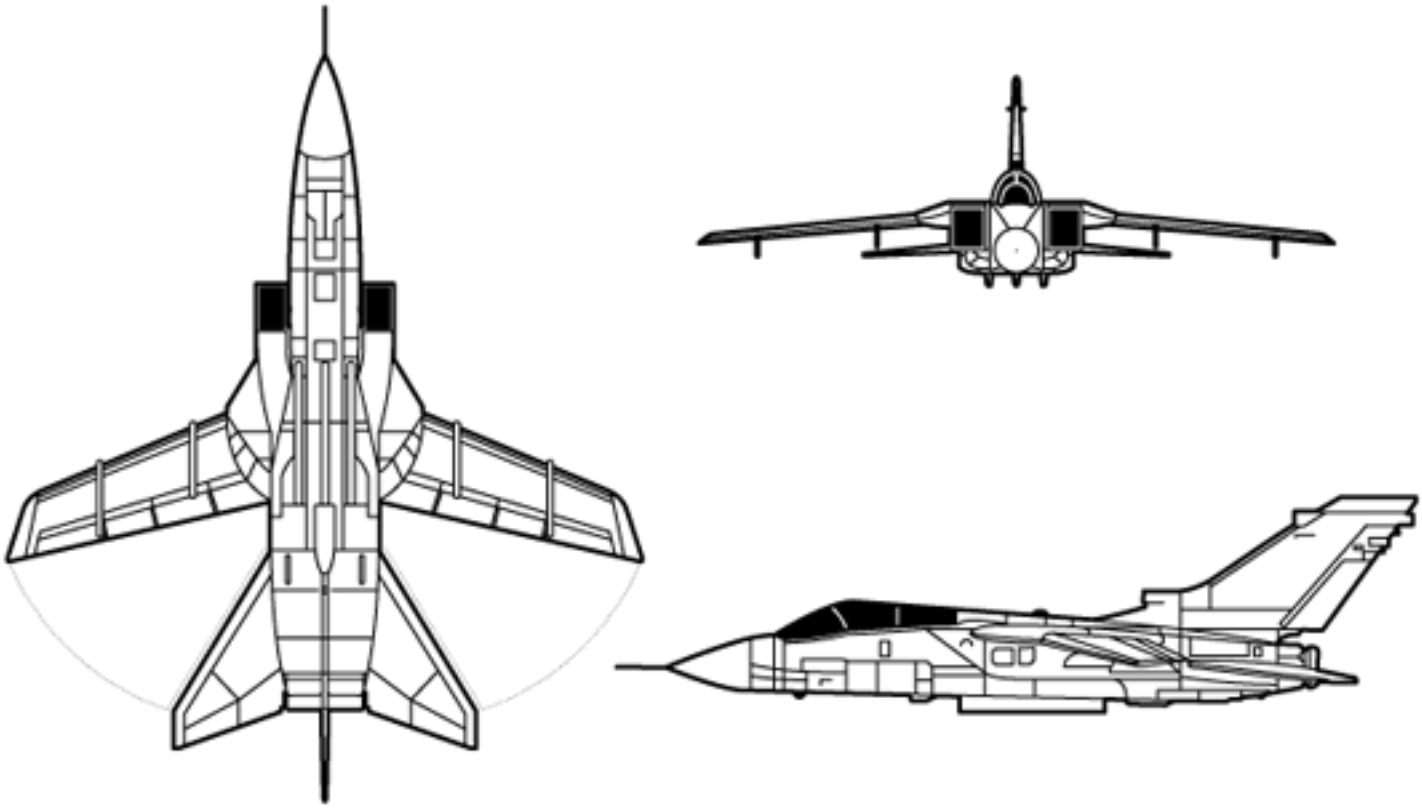
WEFT DESCRIPTION

Wings. Mid-mounted; LERX extends downward and forward of the wing roots. Semidelta with square tips.
Engine(s). Two turbojets in the fuselage. Square, diagonally-cut air intakes mounted under the wings alongside the fuselage.
Fuselage. Rectangular from air intakes to the tail. Pointed nose and bubble canopy.
Tail. Fins swept-back, tapered with square tips, and mounted outboard of the engines. Flats are mid-mounted, swept-back, and tapered.

USER COUNTRIES

Belarus, CIS, Germany, People's Republic of China, Ukraine.

TORNADO ADV (BAe)



GENERAL DATA

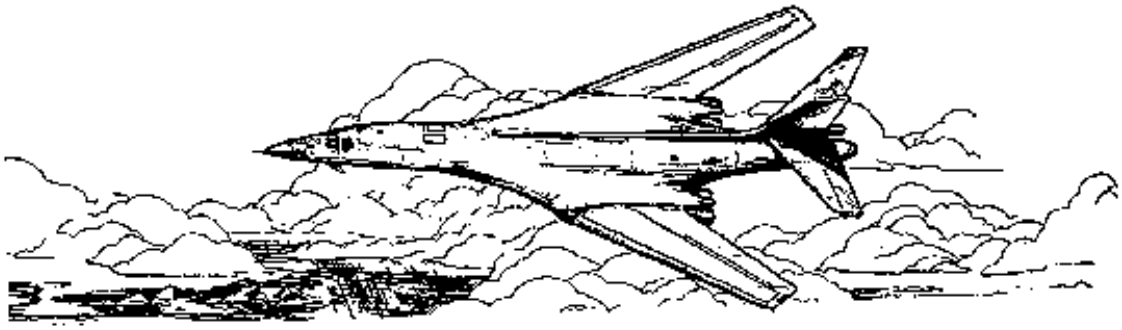
Country of Origin. UK.
Similar Aircraft. Su-24 Fencer, F-14 Tomcat, F-15 Eagle.
Crew. Two.
Role. Air defense variant interceptor.
Armament. Missiles, cannon.
Dimensions. Length: 59 ft, 3 in (18.06 m). Span: 45 ft, 7 in (13.9 m).

WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with angular, blunt tips.
Engine(s). Two turbofans inside body. Air intakes diagonal and box-like alongside the fuselage forward of the wing roots. Twin exhausts.
Fuselage. Solid, needle nose. Body thickens at midsection and tapers to the tail section. Bubble cockpit.
Tail. Tall, swept-back, and tapered fin with curved tip and a step in the leading edge. Flats are large, mid-mounted on the body, swept-back, and tapered with blunt tips.

USER COUNTRIES

UK, Saudi Arabia.

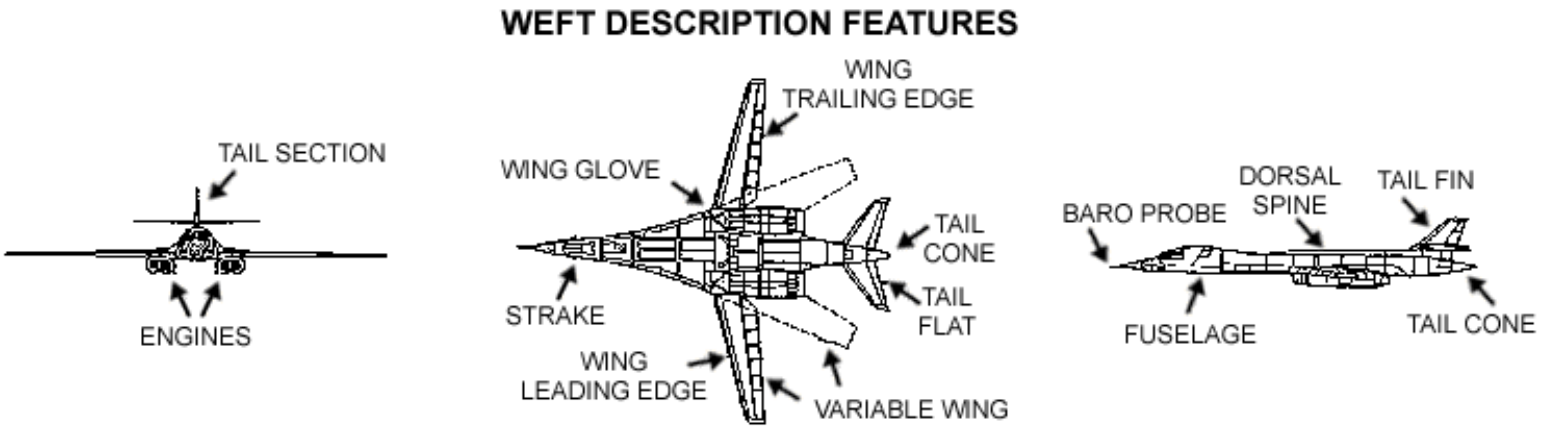


CHAPTER 7

Bomber Aircraft

This chapter includes bomber aircraft of several countries. Modern bomber aircraft can fly at low altitudes for very long distances. Armament for these lethal machines has been modernized to include air-launched cruise missiles and short-range attack missiles, in addition to a huge assortment of nuclear and nonnuclear munitions.

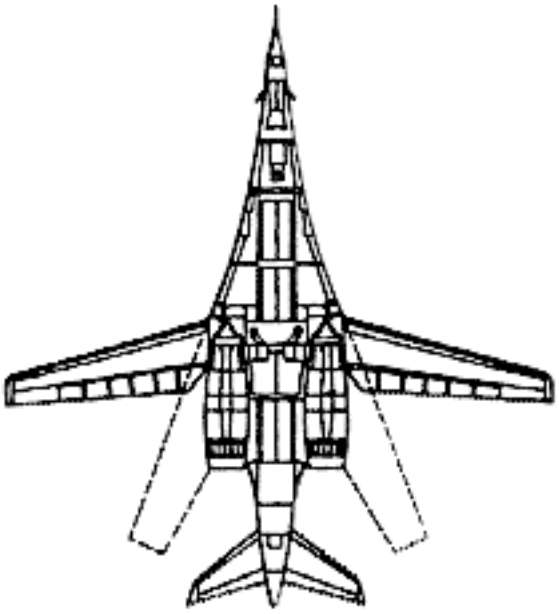
When these type aircraft fly at their low altitudes, observers will be able to detect and recognize them. For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. Line drawings are not to scale. The following illustration shows bomber aircraft WEFT description features.

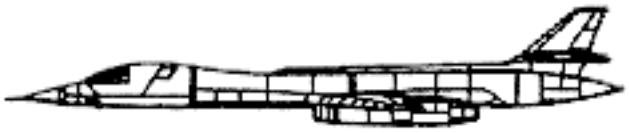


Chapter 7 Aircraft List

B-1B Lancer	Il-28 Beagle	Tu-26 Backfire
B-2	Tu-16 Badger	Tu-95 Bear
B-52 Stratofortress	Tu-22 Blinder	Tu-160 Blackjack
Canberra	.	.

B-1B LANCER (ROCKWELL INTERNATIONAL)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Tu-26 Backfire, Tu-160 Blackjack.
Crew. Four.
Role. Supersonic, long-range bomber.
Armament. ALCMs, SRAMs, bombs.
Dimensions. Length: 146 ft, 8 in (44.8 m). Span: 136 ft, 8 in (41.7 m).

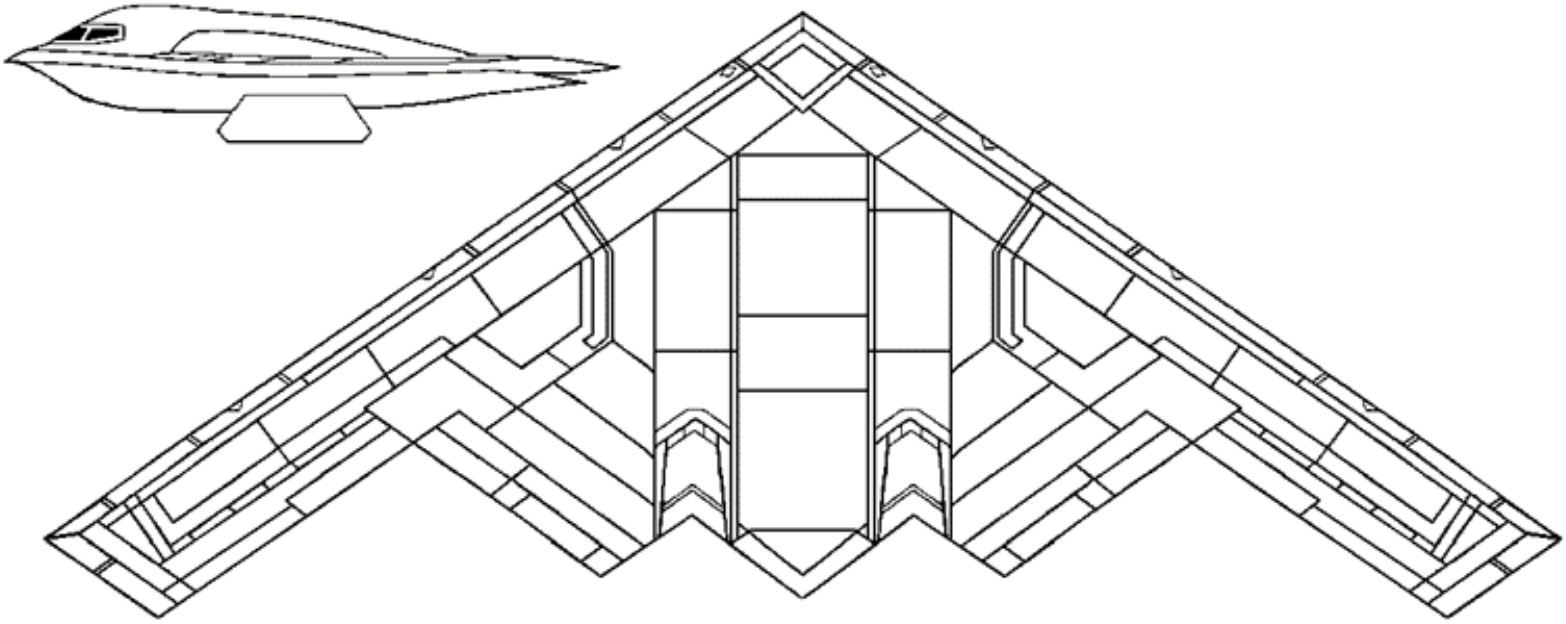
WEFT DESCRIPTION

Wings. Low-mounted, variable, swept-back, and tapered with blunt tips. Leading edge root extension.
Engine(s). Four turbofans; two side-by-side pods on each side of the fuselage. Square air intakes under the wings. Four exhausts.
Fuselage. Long, slender, pointed nose and tail. Flattened belly except for engine pods. Body widens progressively from the LERX through the exhausts. Stepped canopy. Tapered tail section overhangs the exhausts. Tail cone.
Tail. Swept-back, tapered fin with square tip. Flats mid-mounted on fin, swept-back, and tapered with blunt tips.

USER COUNTRY

USA.

B-2 (NORTHROP)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. None.
Crew. Two. Provisions for three.
Role. Low-observable strategic bomber.
Armament. Cruise and attack missiles. Bombs both tactical and nuclear. Sea mines.
Dimensions. Length: 69 ft (21.03 m). Span: 172 ft (52.43 m)

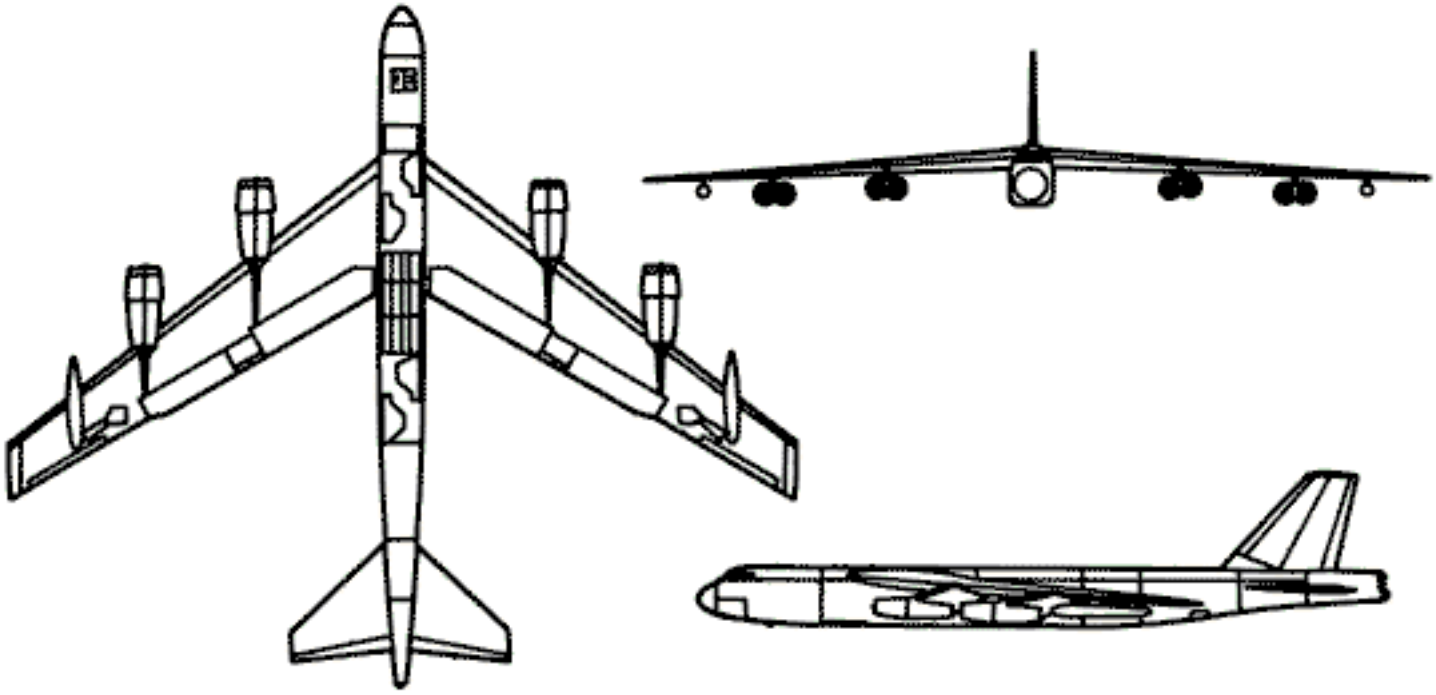
WEFT DESCRIPTION

Wings. Straight, swept-back leading edges, "double-W" trailing edges and square tips.
Engine(s). Four turbofans mounted in pairs within wing structure. Exhausts overwing.
Fuselage. Blended flying wing with sharp pointed nose. Flush cockpit, bulging spine.
Tail. No tail flats or fins.

USER COUNTRY

USA.

B-52 STRATOFORTRESS (BOEING)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Tu-95 Bear.
Crew. Six.
Role. Strategic bomber.
Armament. Bombs, ALCMs, SRAMs, cannon.
Dimensions. Length: 157 ft, 7 in (48.6 m). Span: 185 ft (56.4 m).

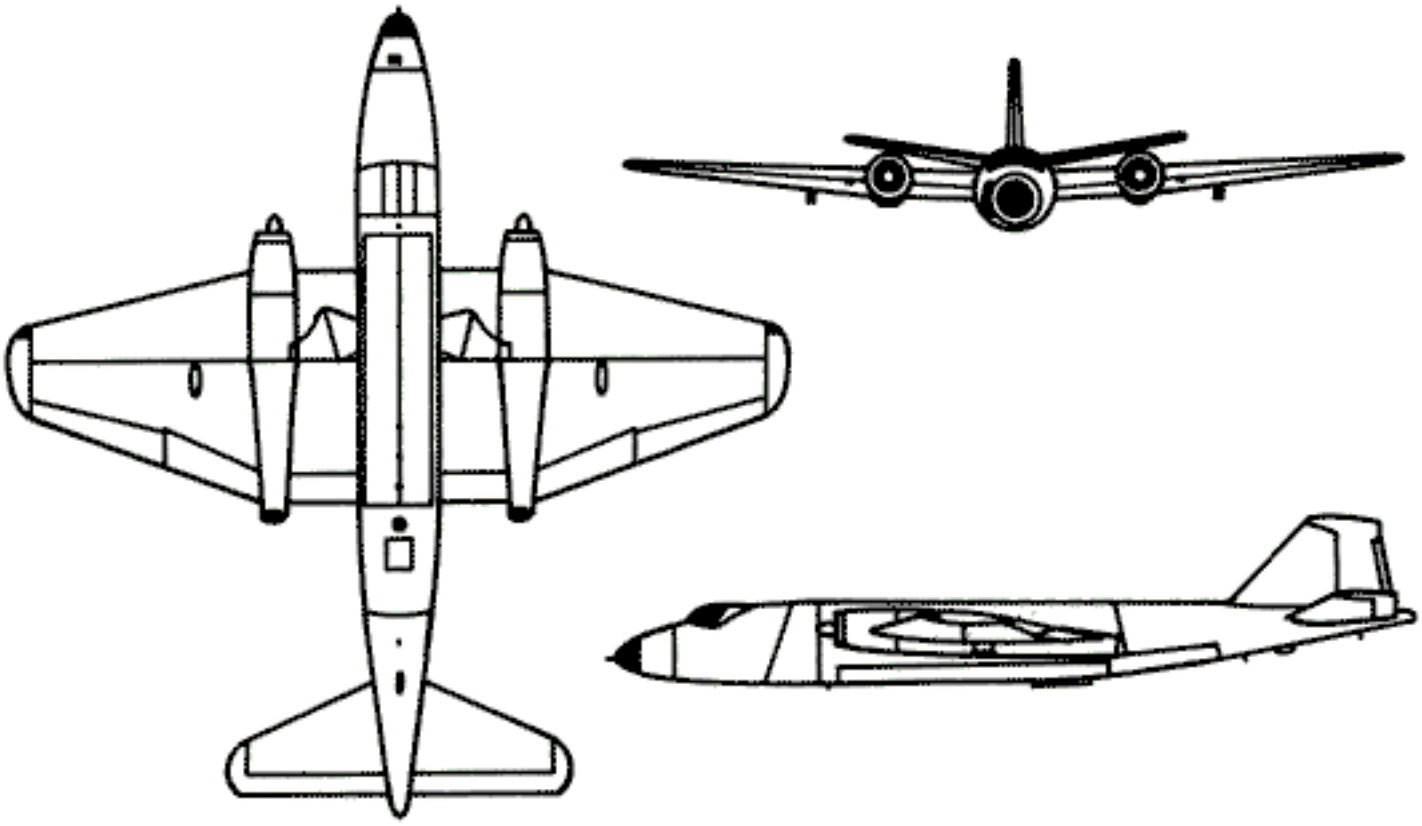
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with blunt tips and a negative slant.
Engine(s). Eight turbofans suspended in four pairs from pylons beneath the wings. Engines extend forward of the wings' leading edges.
Fuselage. Long, slender, and tapers to the rear. Solid, tapered nose. Stepped cockpit.
Tail. Swept-back and tapered fin with square tip. Flats mid-mounted on fuselage, swept-back, and tapered with blunt tips.

USER COUNTRY

USA.

CANBERRA (ENGLISH ELECTRIC, BAC)



GENERAL DATA

Countries of Origin. UK, USA.
Similar Aircraft. I1-28 Beagle.
Crew. Two.
Role. Light bomber, ECM, reconnaissance, EW, night interdictor, trainer.
Armament. Bombs, cannons, rockets, missiles.
Dimensions. Length: 65 ft, 6 in (20 m). Span: 63 ft, 11 in (19.4 m).

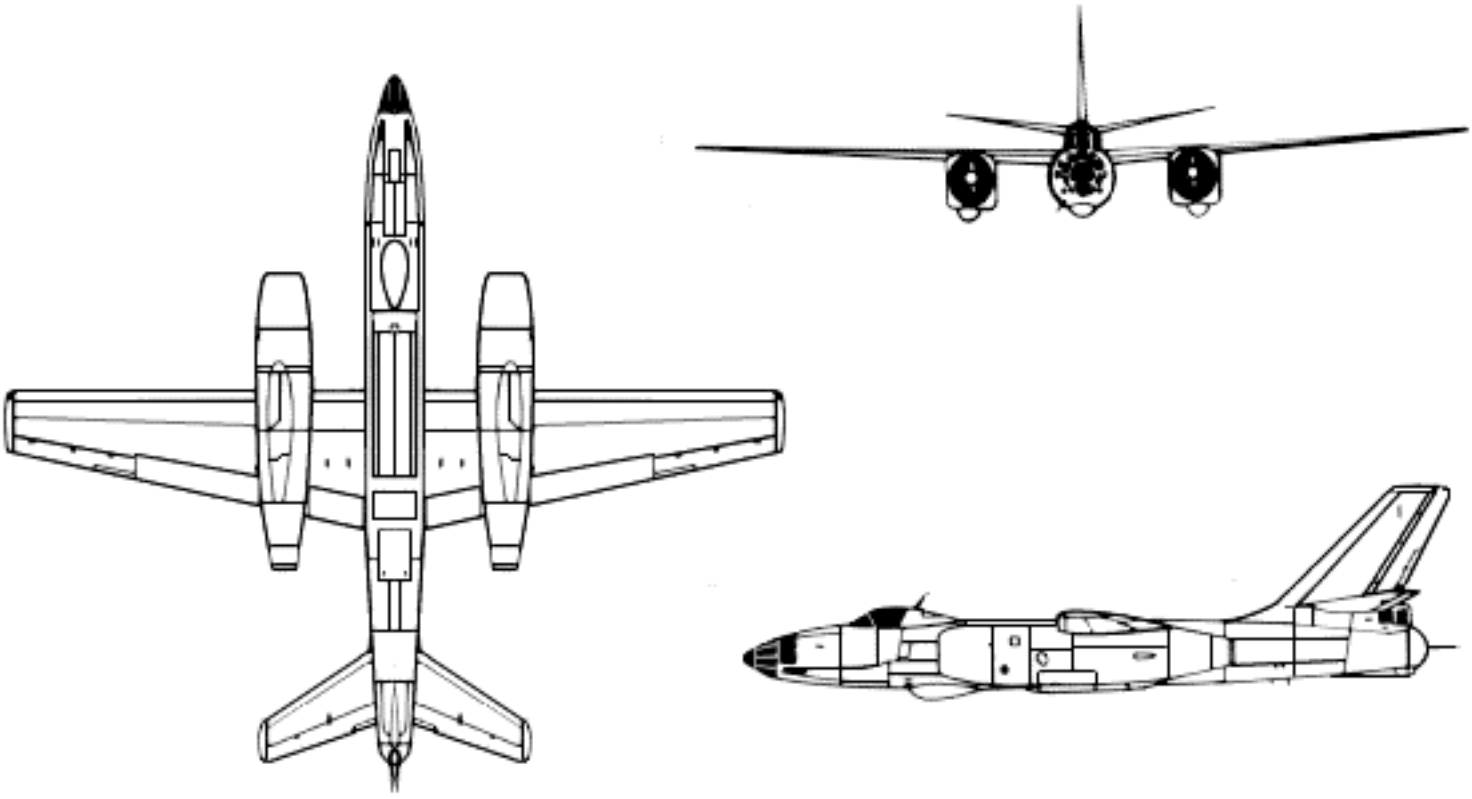
WEFT DESCRIPTION

Wings. Wide, mid-mounted wing; straight from the fuselage to the engine pods and equally tapered from engine pods to the blunt tips.
Engine(s). Two turbojets or turbofans are mounted in the wings. Air intakes are forward of the wings' leading edges. Exhausts are to the rear of the wings' trailing edges.
Fuselage. Cigar-shaped and tapered to the rear. Round, solid, or glassed-in nose. Bubble canopy.
Tail. Flats high-mounted on fuselage tapered with rounded tips and a positive slant. Fin is unequally tapered with a blunt tip.

USER COUNTRIES

Argentina, Peru, UK.

Il-28 BEAGLE (ILYUSHIN)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Canberra, Yak-28 Brewer.
Crew. Three.
Role. Light bomber, trainer.
Armament. Bombs, two 23-mm cannons in tail.
Dimensions. Length: 57 ft, 11 in (17.6 m). Span: 70 ft, 5 in (21.5 m).

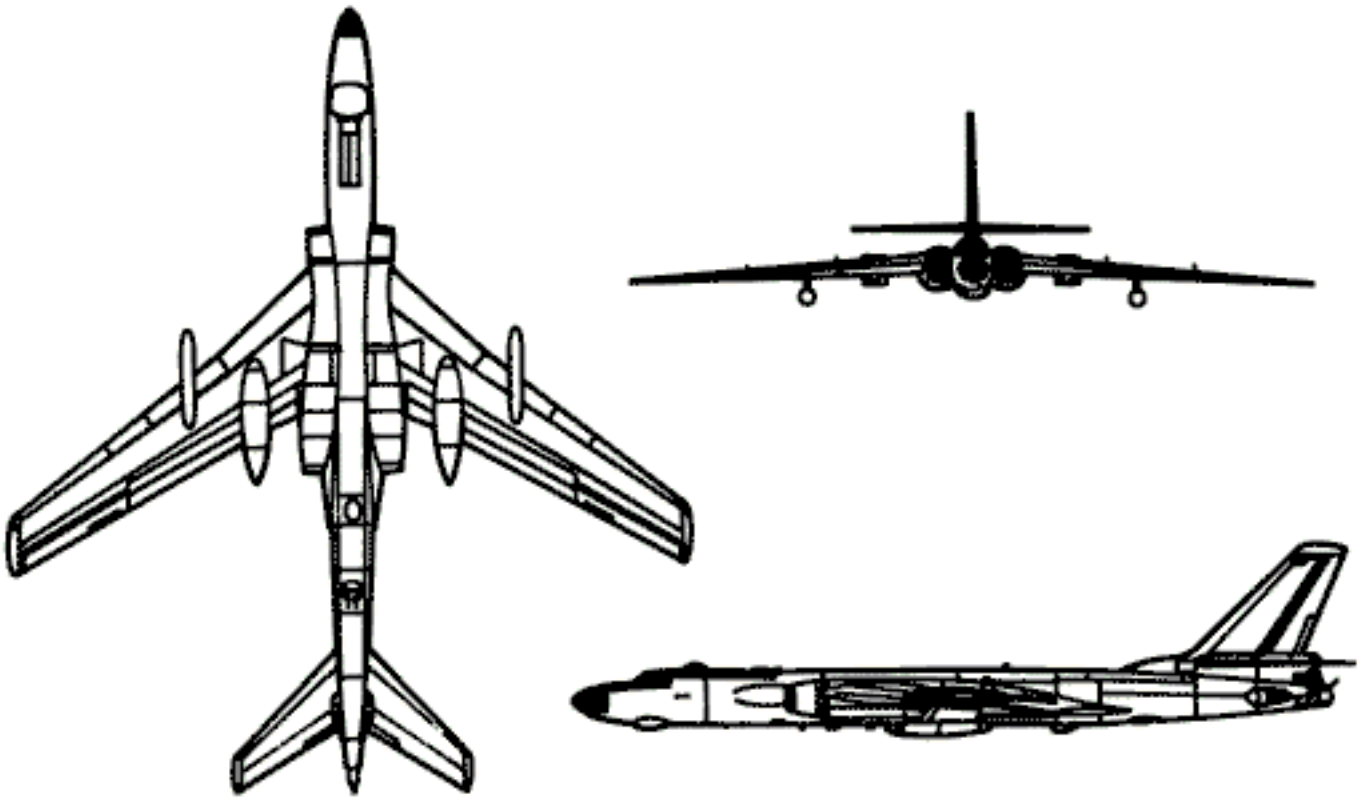
WEFT DESCRIPTION

Wings. High-mounted with straight leading edge and forward-tapered trailing edge with blunt tips.
Engine(s). Two turbojets mounted beneath the wings in pods. Pods extend beyond wings' leading and trailing edges.
Fuselage. Tubular and cigar-shaped tapering to the rear. Rounded, glassed-in nose. Bubble canopy.
Tail. Fin is swept-back and tapered with a blunt tip. Flats are low-mounted on the fin, swept-back, and tapered with blunt tips. A glassed-in tail gunner compartment is to the rear of the tail.

USER COUNTRIES

Egypt, North Korea (H-5), People's Republic of China (H-5).

Tu-16 BADGER (TUPOLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. None in this manual.
Crew. Six.
Role. Strategic bomber, ELINT, ECM.
Armament. Bombs, missiles, cannon.
Dimensions. Length: 114 ft (34.8 m). Span: 108 ft (32.9 m).

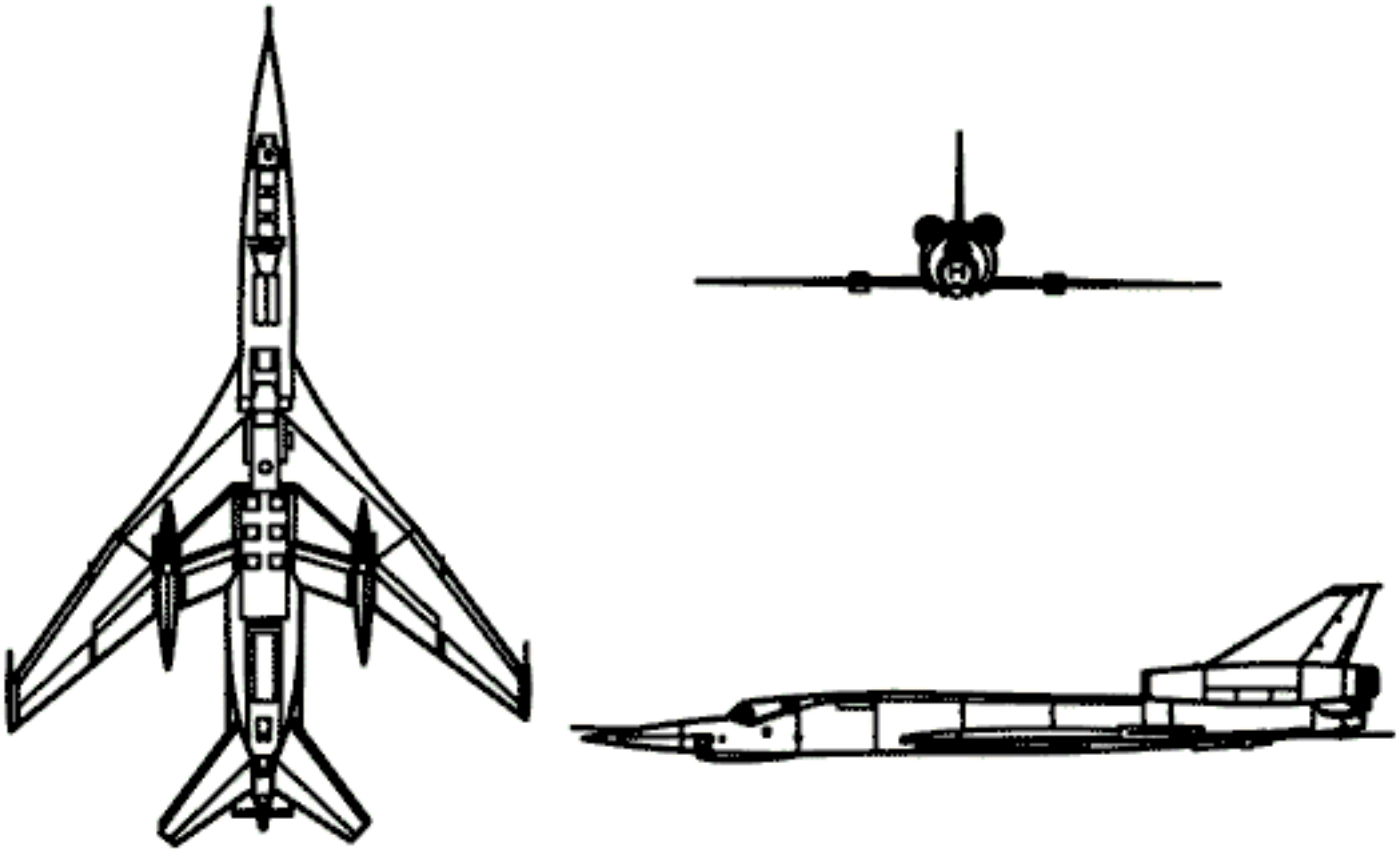
WEFT DESCRIPTION

Wings. Mid-mounted, swept-back, and tapered with blunt tips. Fences on top of wings. Landing gear pods extend beyond wings' trailing edges.
Engine(s). Two turbojets mounted in wing roots extend beyond the leading and trailing edges of the wing root. Round air intakes.
Fuselage. Long, slender, and bulging where the engines are mounted and tapered to the tail. Round, glassed-in nose. Stepped cockpit.
Tail. Swept-back, tapered fin and flats with blunt tips. Flats low-mounted on the fin. Tail gunner compartment.

USER COUNTRIES

CIS, Egypt, Iraq, People's Republic of China (H-6), Ukraine.

Tu-22 BLINDER (TUPOLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. None in this manual.
Crew. Three.
Role. Bomber, reconnaissance, ELINT.
Armament. Bomber, missiles, cannon.
Dimensions. Length: 133 ft (40.5 m). Span: 91 ft (27.75 m).

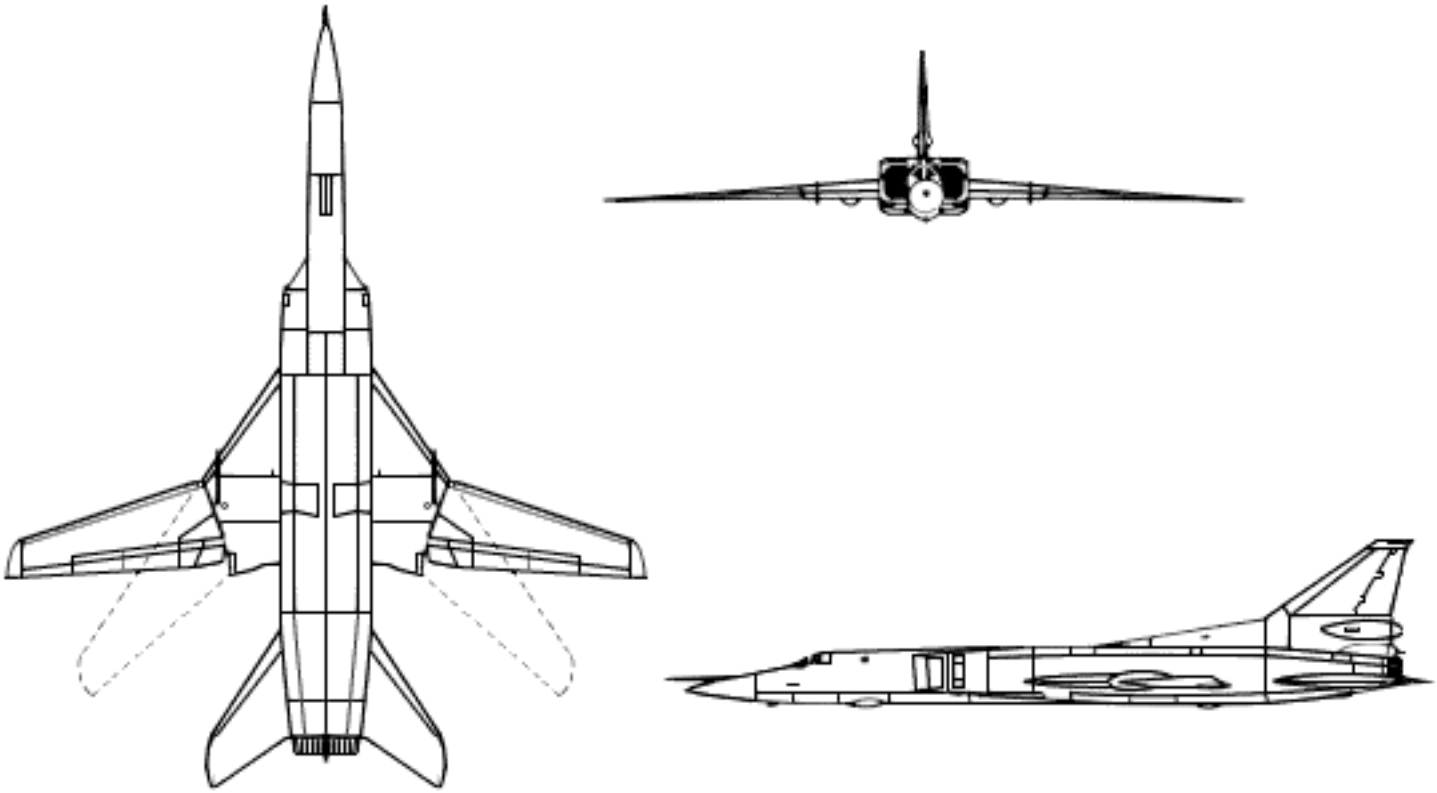
WEFT DESCRIPTION

Wings. Low-mounted, swept-back, and tapered with square tips. Wide wing root. Landing gear pods extend beyond wings' trailing edges.
Engine(s). Two turbojets low-mounted on the tail fin. Round air intakes.
Fuselage. Tube-shaped with solid, pointed nose. Stepped cockpit.
Tail. Flats low-mounted on the fuselage, swept-back, and tapered with square tips. Fin is swept-back, and tapered with square tip.

USER COUNTRIES

CIS, Iraq, Libya, Ukraine.

Tu-26 BACKFIRE (TUPOLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. B-1B Lancer, Tu-160 Blackjack.
Crew. Four.
Role. Strategic medium bomber, maritime reconnaissance.
Armament. Bombs, missiles, cannon.
Dimensions. Length: 138 ft (42 m). Span: 115 ft (35 m).

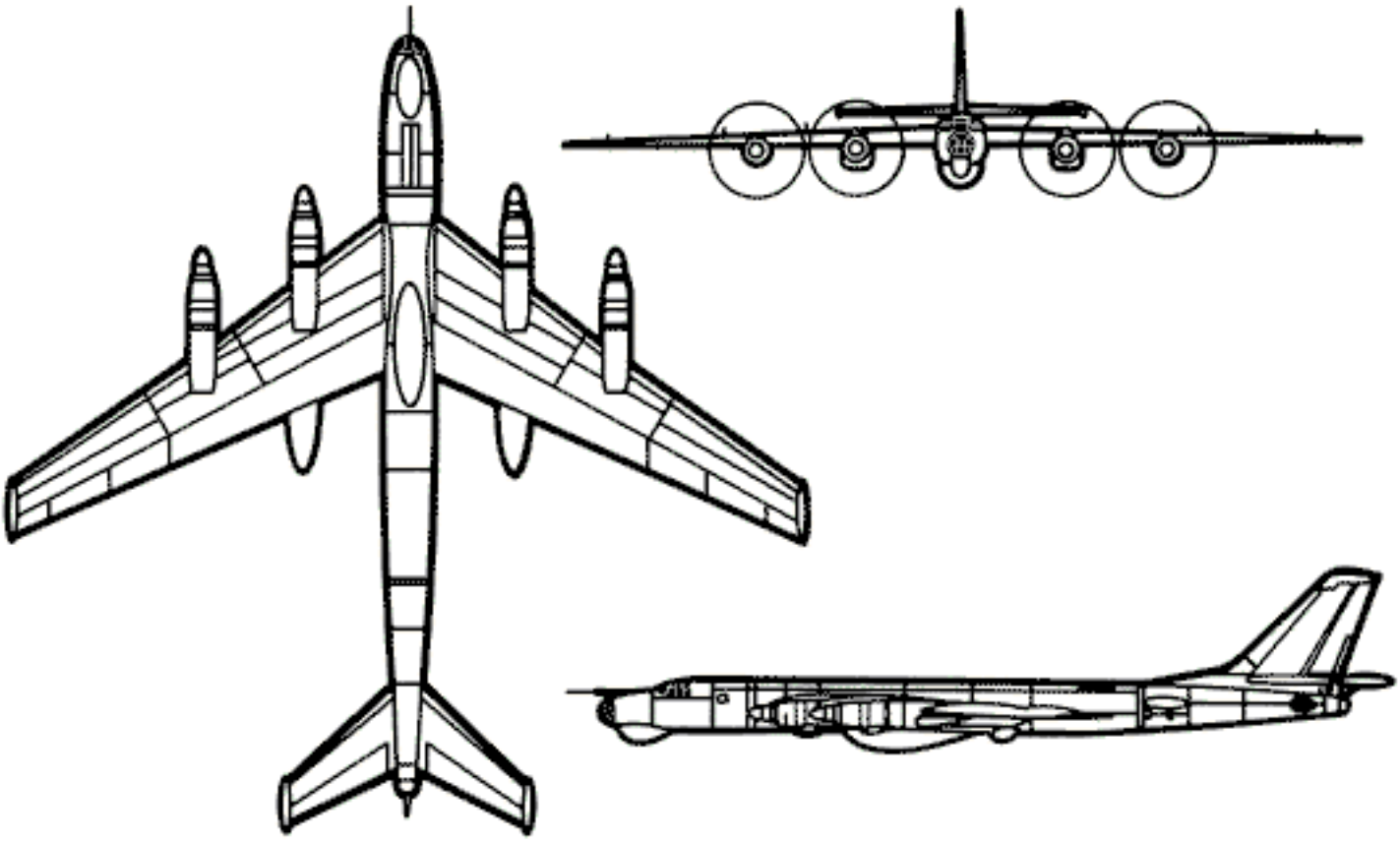
WEFT DESCRIPTION

Wings. Mid-mounted, variable, swept-back, and tapered with curved tips. Wide wing root.
Engine(s). Two turbofans mounted in body. Large, rectangular air intakes. Dual exhausts.
Fuselage. Long and slender with solid, pointed nose. Body is rectangular from the air intakes to the exhausts. Stepped cockpit.
Tail. Fin is swept-back and tapered with a square tip. Flats are mid-mounted on body, swept-back, and tapered with blunt tips.

USER COUNTRIES

CIS, Ukraine.

Tu-95 BEAR (TUPOLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. B-52 Stratofortress.
Crew. Unknown.
Role. Strategic bomber, also maritime.
Armament. Bombs, missiles, cruise missiles, two 23-mm cannons in the tail.
Dimensions. Length: 162 ft, 5 in (49.5 m). Span: 167 ft, 8 in (51.1 m).

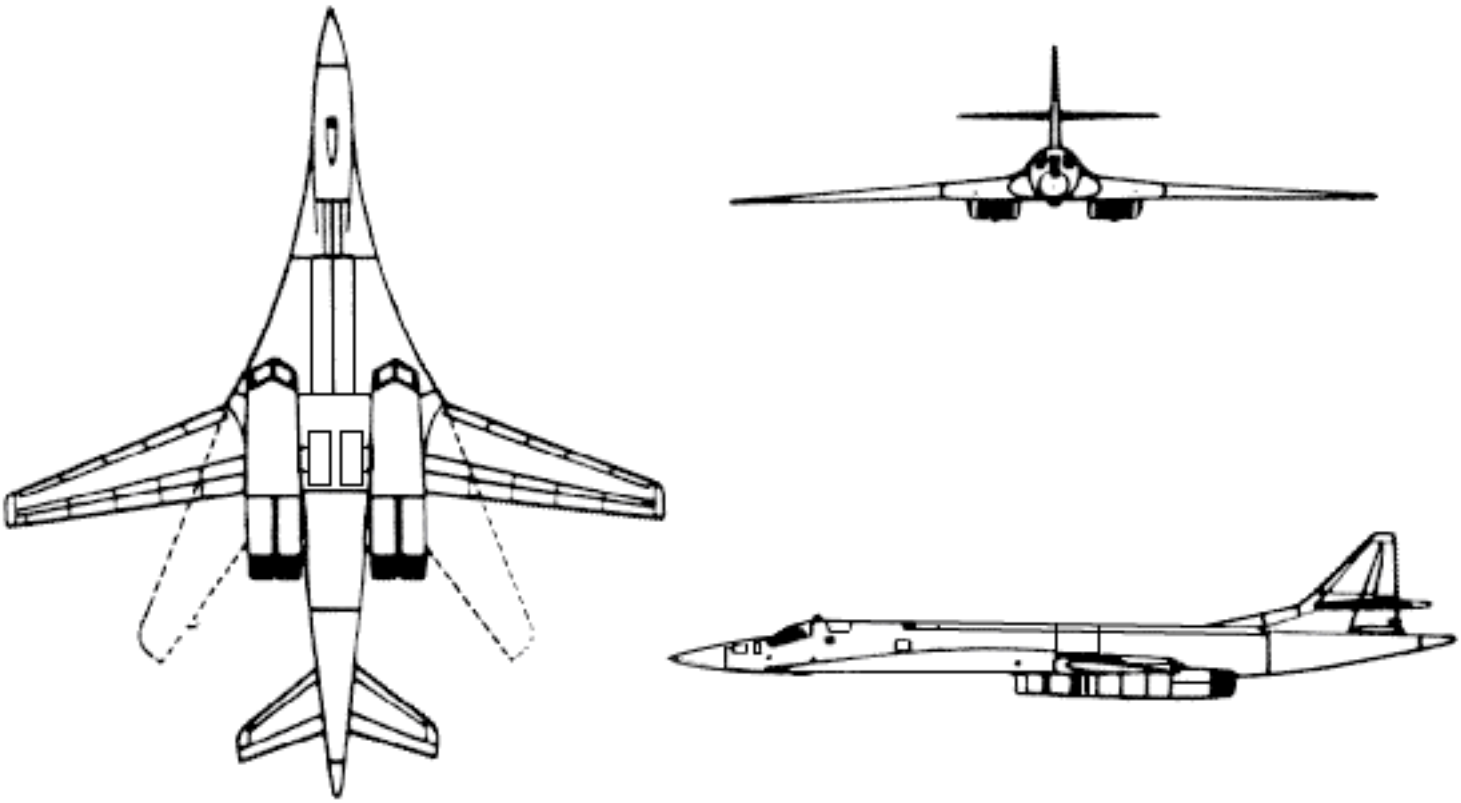
WEFT DESCRIPTION

Wings. Mid-mounted, swept-back, and tapered with blunt tips.
Engine(s). Four turboprops with contrarotating propellers located on the wings. Engine nacelles extend well beyond the wings' leading edges.
Fuselage. Tube-shaped with rounded nose; tapers to the rear. Stepped cockpit. Tail gun compartment.
Tail. Fin swept-back and tapered with a square tip. Flats low-mounted on the fin, swept-back, and tapered.

USER COUNTRIES

CIS, India (Bear F), Ukraine.

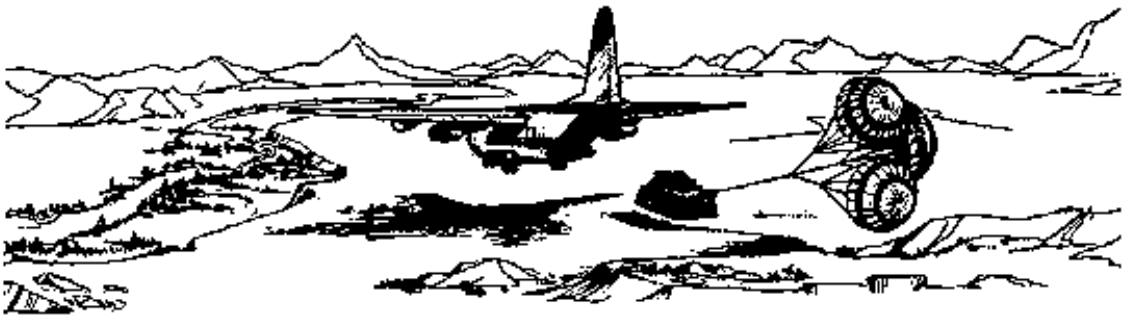
Tu-160 BLACKJACK (TUPOLEV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. B-1B Lancer, Tu-26 Backfire.
Crew. Four.
Role. Strategic bomber.
Armament. Bombs, missiles, ALCMs.
Dimensions. Length: 177 ft (54 m). Span: 182 ft, 9 in (55.7 m).

WEFT DESCRIPTION

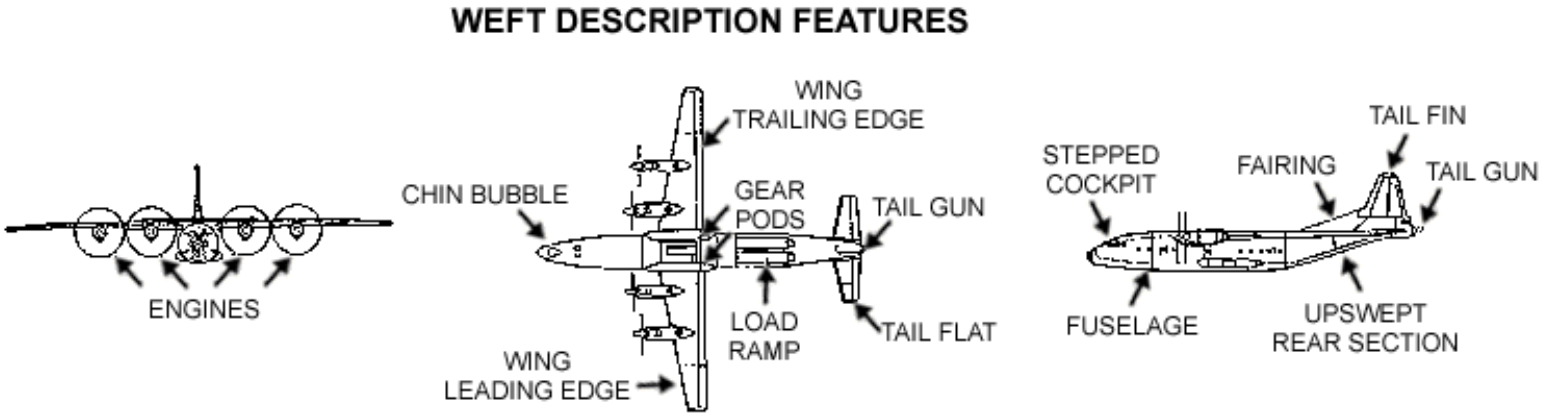


CHAPTER 8

Cargo and Transport Aircraft

This chapter provides examples of cargo and transport aircraft. Many of these aircraft have very similar recognition features because they were all designed to perform similar, specific missions such as operating from short, unimproved runways, roads, or fields. Modern cargo and transport aircraft are manufactured with high-mounted straight wings which allow greater lift and better control at low speeds and altitudes.

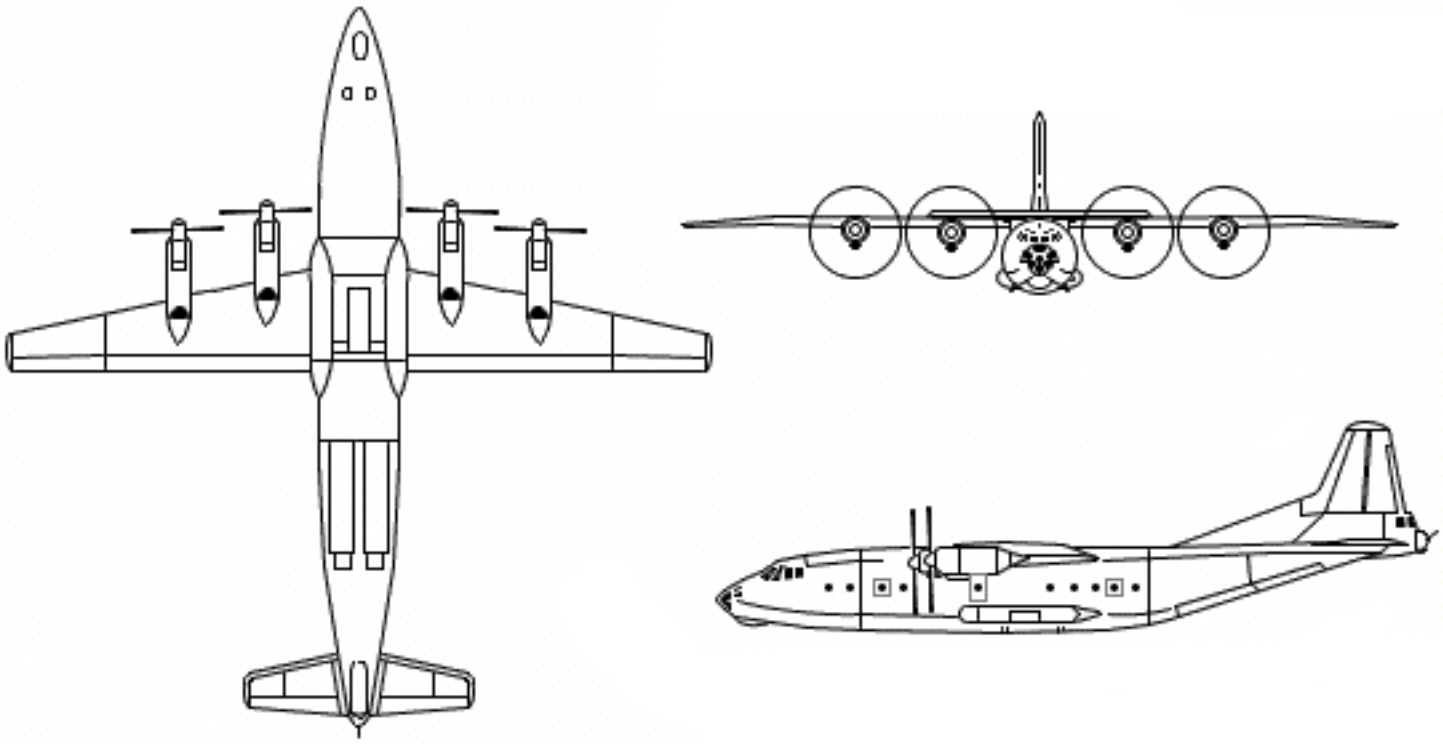
For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. Line drawings are not to scale. The following illustration shows cargo and transport aircraft WEFT description features.



Chapter 8 Aircraft List

An-12 Cub	Buffalo, C-8A	C-141B Starlifter
An-24 Coke, An-26 Curl	C-5 Galaxy	C-160 Transall
An-32 Cline	Caribou, C-7A	DC-3 Dakota
An-72 Coaler	C-17A Globemaster III	G.222
An-124 Condor	C-123 Provider	Il-14 Crate
Aviocar C-212	C-130 Hercules	Il-76 Candid

An-12 CUB (ANTONOV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. C-130 Hercules, C-160 Transall, G.222.
Crew. Six.
Role. Medium-cargo/transport (100 equipped troops, vehicles, and weapons), ECM, ELINT.
Armament. Twin 23-mm cannons in tail.
Dimensions. Length: 121 ft, 4 in (37 m). Span: 124 ft, 8 in (38 m).

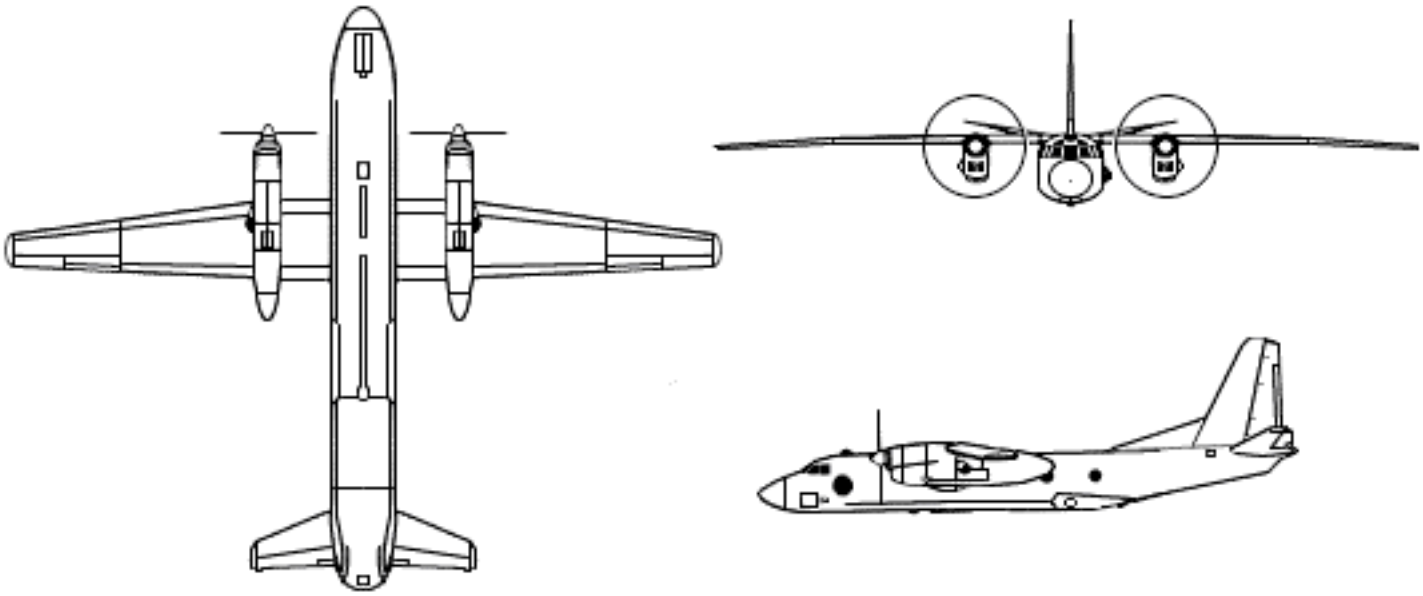
WEFT DESCRIPTION

Wings. High-mounted with drooping outer wing panels, back-tapered leading edges, straight trailing edges, and blunt tips.
Engine(s). Four turboprop engines mounted under the wings' leading edges.
Fuselage. Round, slender body with stepped cockpit and glassed-in nose. Landing gear pods bulge at lower body midsection. Upswept rear section.
Tail. Flats are unequally tapered with blunt tips and mounted high on the fuselage. Fin is tapered with a blunt tip and a step in the leading edge. Two 23-mm guns in tail turret.

USER COUNTRIES

Angola, Afghanistan, Bulgaria, CIS, Czech Republic, Egypt, Ethiopia, India, Iraq, People's Republic of China (Y-12), Poland, Slovakia, South Yemen, Sri Lanka, Syria (Y-12), Yugoslavia.

An-24 COKE, An-26 CURL (ANTONOV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. An-32 Cline, IL-20 Coot, P-3C Orion, An-12 Cub.
Crew. Five.
Role. Short haul, light-transport, cargo (40 equipped troops, small vehicles), paratroop.
Armament. Usually none.
Dimensions. Length: 77 ft, 2 in (23.54 m). Span: 95 ft, 9 in (29.2 m).

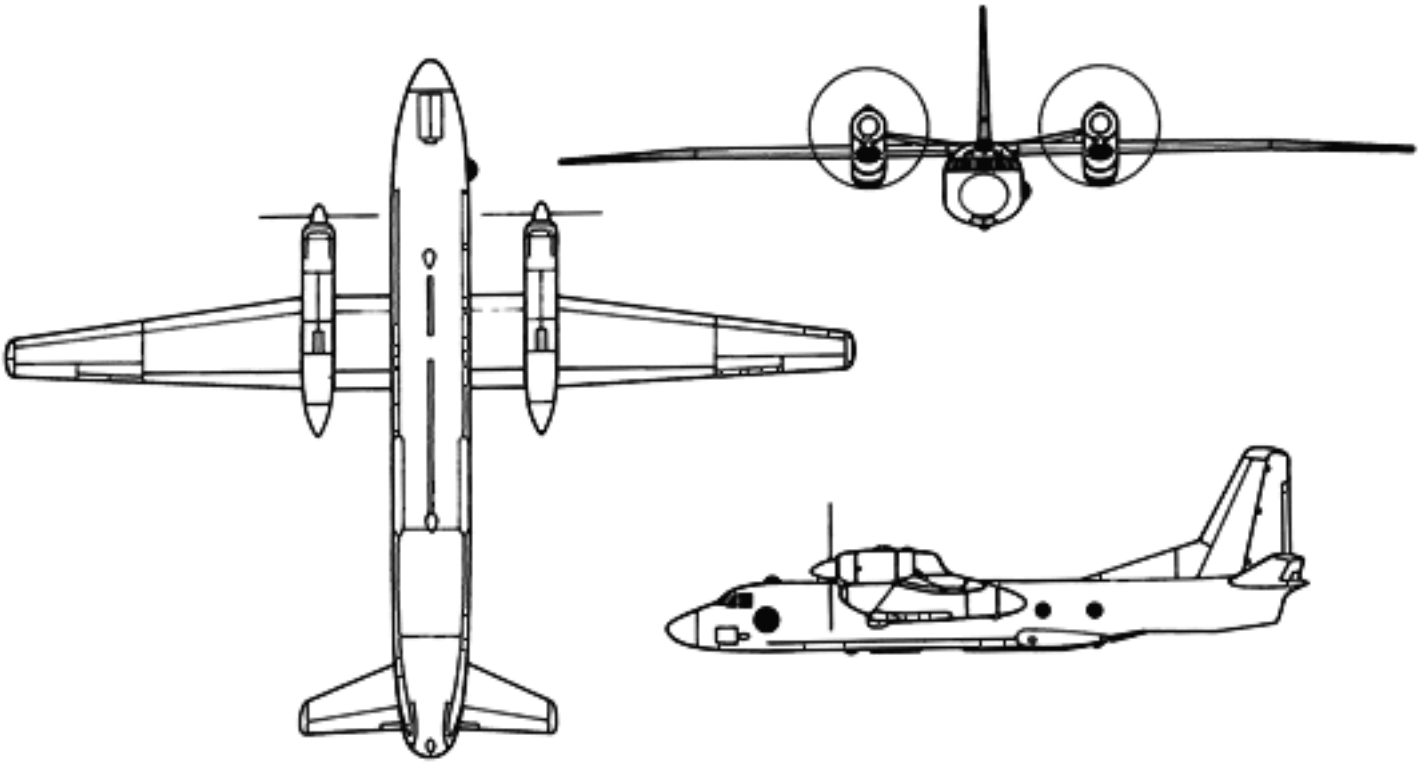
WEFT DESCRIPTION

Wings. High-mounted and equally tapered from the engines to the blunt tips.
Engine(s). Two turboprops mounted in pods beneath the wings. Pods extend beyond the wings' leading and trailing edges.
Fuselage. Long, slender, upswept rear section. Solid, rounded nose. Stepped cockpit.
Tail. Fin is back-tapered with a blunt tip and angular fairing. Flats are high-mounted on the body, back-tapered with blunt tips, and have a positive slant.

USER COUNTRIES

Afghanistan, Angola, Bangladesh, Benin, Bulgaria, Cambodia, Cape Verde, Congo, CIS, Cuba, Czech Republic, Ethiopia, Germany, Hungary, Iraq, Laos, Libya, Madagascar, Mali, Mongolia, Mozambique, Nicaragua, North Korea, People's Republic of China (Y-7), Poland, Romania, Slovakia, Somalia, South Yemen, Syria, Vietnam, Yugoslavia, Zambia.

An-32 CLINE (ANTONOV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. An-24 Coke, An-26 Curl.
Crew. Five.
Role. Short- to medium-range, light-transport, cargo (39 equipped troops, small vehicles), airdrop.
Armament. Usually none.
Dimensions. Length: 78 ft (23.75 m). Span: 95 ft, 9 in (29.2 m).

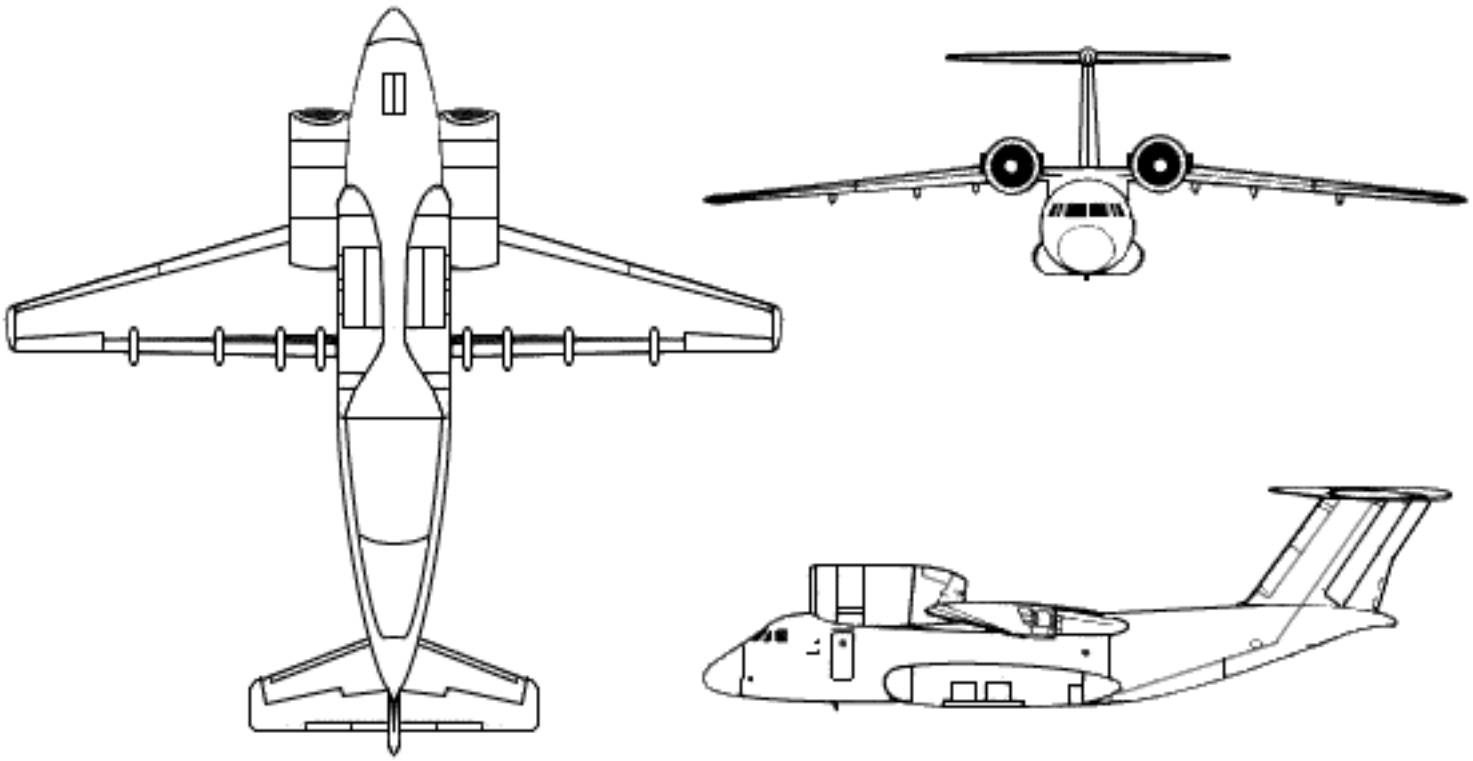
WEFT DESCRIPTION

Wings. High-mounted and equally tapered from the engines to the blunt tips.
Engine(s). Two turboprops mounted in pods over the wings. Pods extend beyond the wings' leading and trailing edges.
Fuselage. Long, tubular, upswept rear section and solid, rounded nose. Stepped cockpit.
Tail. Fin is unequally tapered with blunt tip and angular fairing. Flats are high-mounted on the body, back-tapered with blunt tips, and have a positive slant.

USER COUNTRIES

CIS, Cuba, India, Mongolia, Peru.

An-72 COALER (ANTONOV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. C-160 Transall, G.222.
Crew. Three.
Role. Medium-transport, STOL.
Armament. None.
Dimensions. Length: 87 ft, 2 in (26.56 m). Span: 84 ft, 9 in (25.84 m).

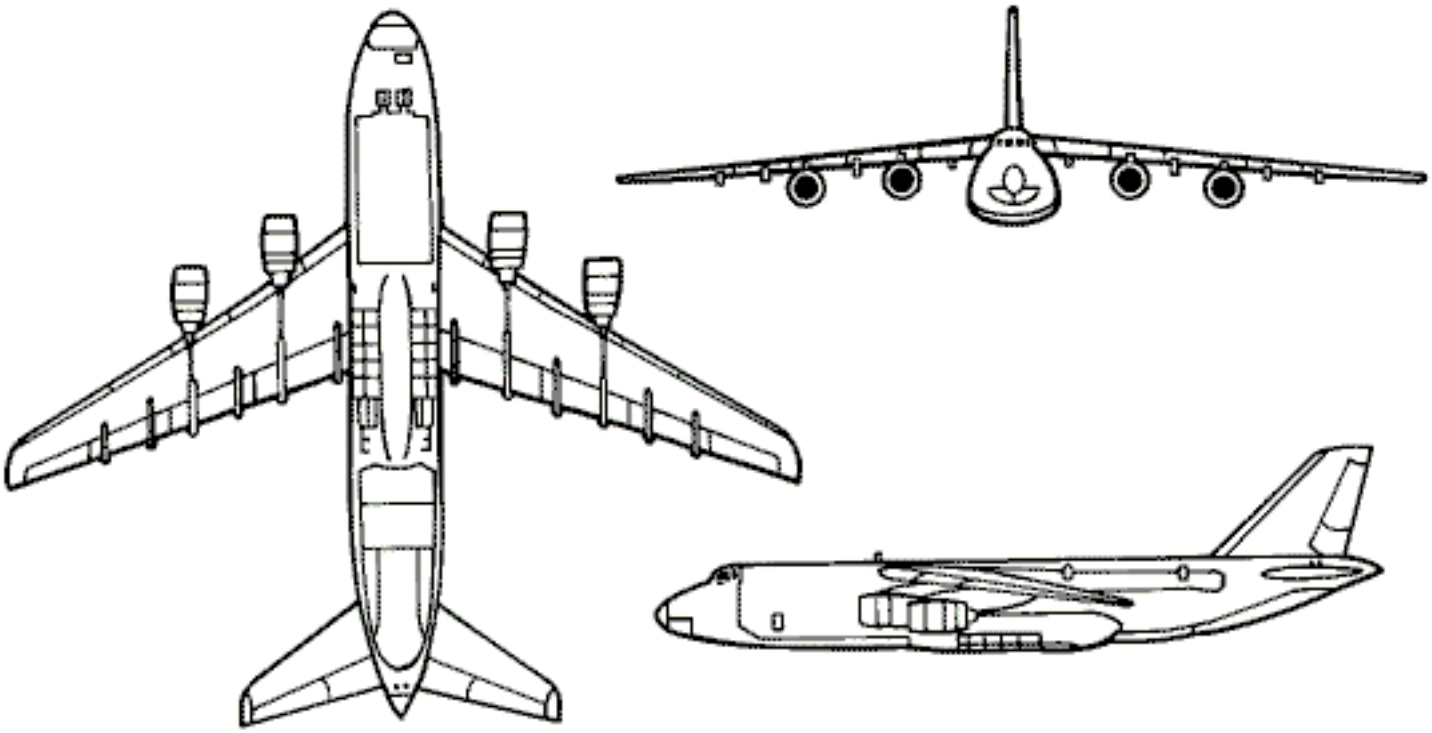
WEFT DESCRIPTION

Wings. High-mounted and back-tapered with blunt tips and a negative slant.
Engine(s). Two turbofans in long pods mounted on top of the wings. Round air intakes extend from the front of the wings' leading edges.
Fuselage. Circular with round, solid nose, upswept rear section, and a flush cockpit.
Tail. Swept-back, untapered fin. Back-tapered flats high-mounted on the fin forming a T.

USER COUNTRY

CIS.

An-124 CONDOR (ANTONOV)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. C-5B Galaxy, C-17A Globemaster III.
Crew. Six--seven with loadmaster.
Role. Strategic transport.
Armament. None.
Dimensions. Length: 226 ft, 3 in (69 m). Span: 240 ft, 5 in (73.3 m).

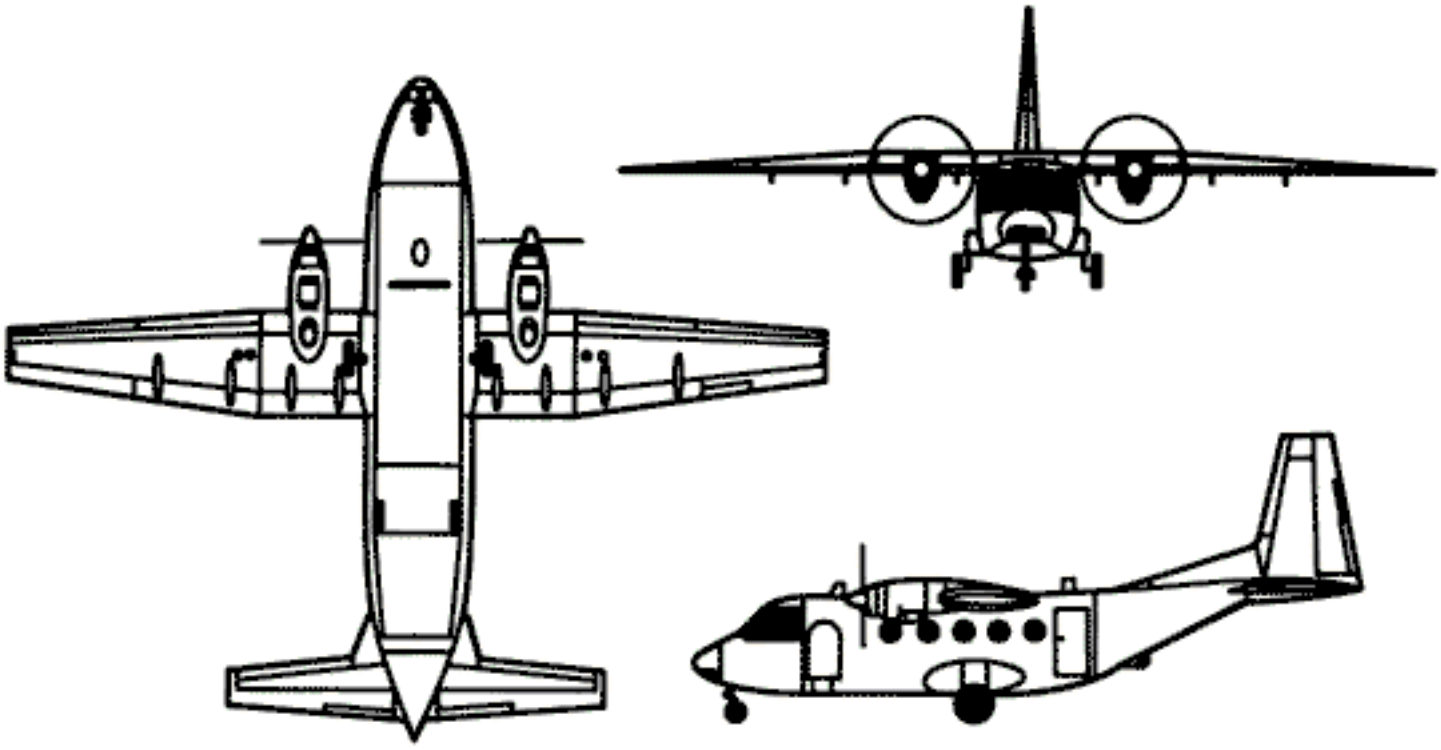
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with curved tips. Negative slant.
Engine(s). Four turbofans mounted on pylons under the wings.
Fuselage. Thick, oval, rounded nose and tapers to the rear. Stepped canopy.
Tail. Fin swept-back and tapered with rounded tips. Flats swept-back, tapered, and mid-mounted on the body.

USER COUNTRY

CIS.

AVIOCAR C-212 (CASA)



GENERAL DATA

Country of Origin. Spain.
Similar Aircraft. C-160 Transall, C-123 Provider, G.222.
Crew. Two.
Role. STOL, light-utility transport (18 equipped troops, light tactical vehicles), airdrop.
Armament. Usually none.
Dimensions. Length: 49 ft, 9 in (15.18 m). Span: 62 ft, 4 in (19.12 m).

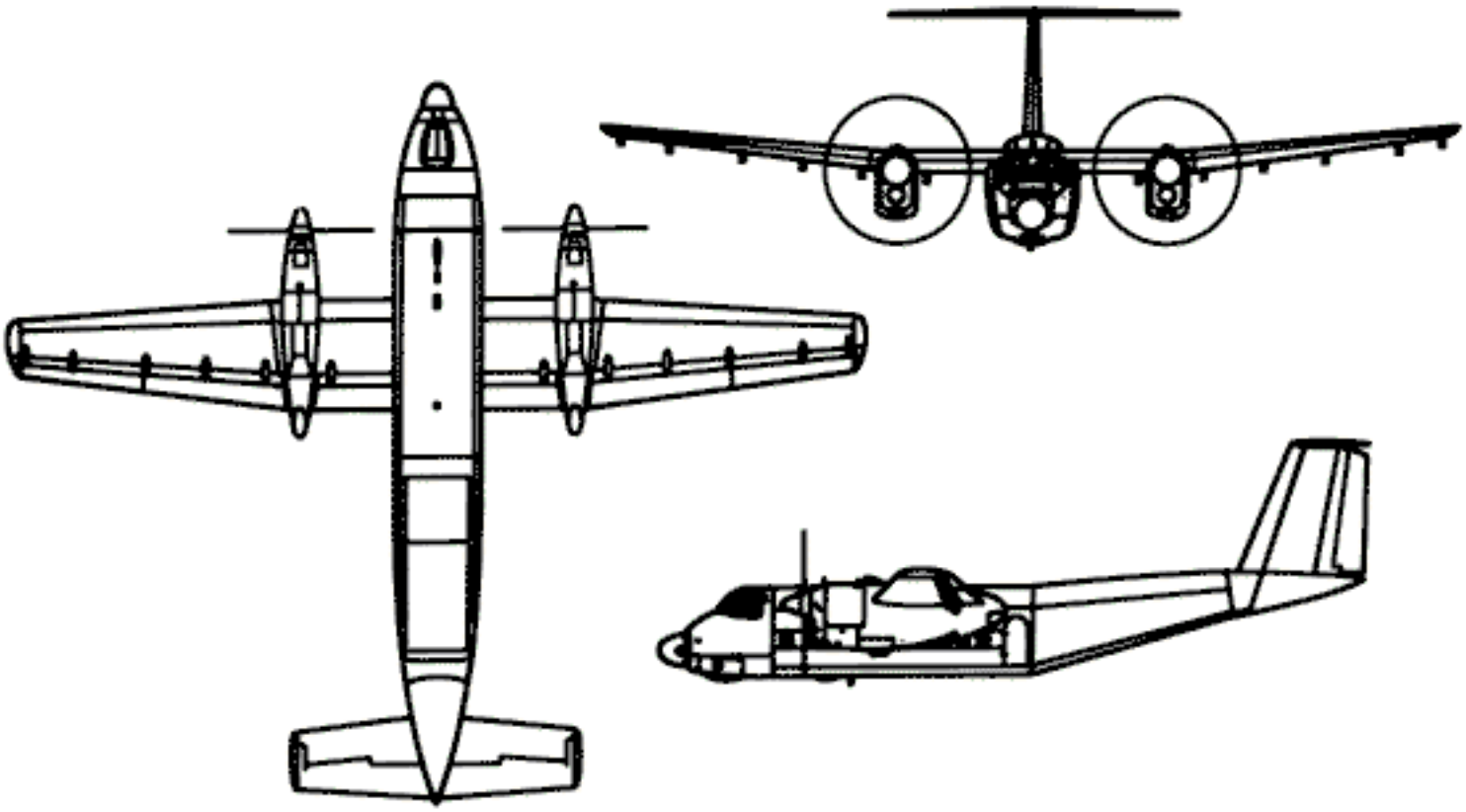
WEFT DESCRIPTION

Wings. High-mounted and unequally tapered from midwing to the square tips.
Engine(s). Two turboprops mounted in pods under the wings' leading edges.
Fuselage. Thick, cigar-shaped with flat bottom and upswept rear section. Stepped cockpit.
Tail. Fin is equally tapered with a square tip. Straight fairing in the leading edge. Flats are mid-mounted on the body and tapered with square tips.

USER COUNTRIES

Angola, Chad, Equatorial New Guinea, Ghana, Mexico, Nicaragua, Panama, Paraguay, Portugal, Saudi Arabia, Somalia, South Africa, Spain, Sudan, Venezuela.

BUFFALO, C-8A (DE HAVILLAND CANADA)



GENERAL DATA

Country of Origin. Canada (DHC-5, CC-115).
Similar Aircraft. C-7A Caribou.
Crew. Three.
Role. STOL transport, cargo (41 troops, 1/4-ton vehicles, and freight).
Armament. Usually none.
Dimensions. Length: 79 ft (24.08 m). Span: 96 ft (29.26 m).

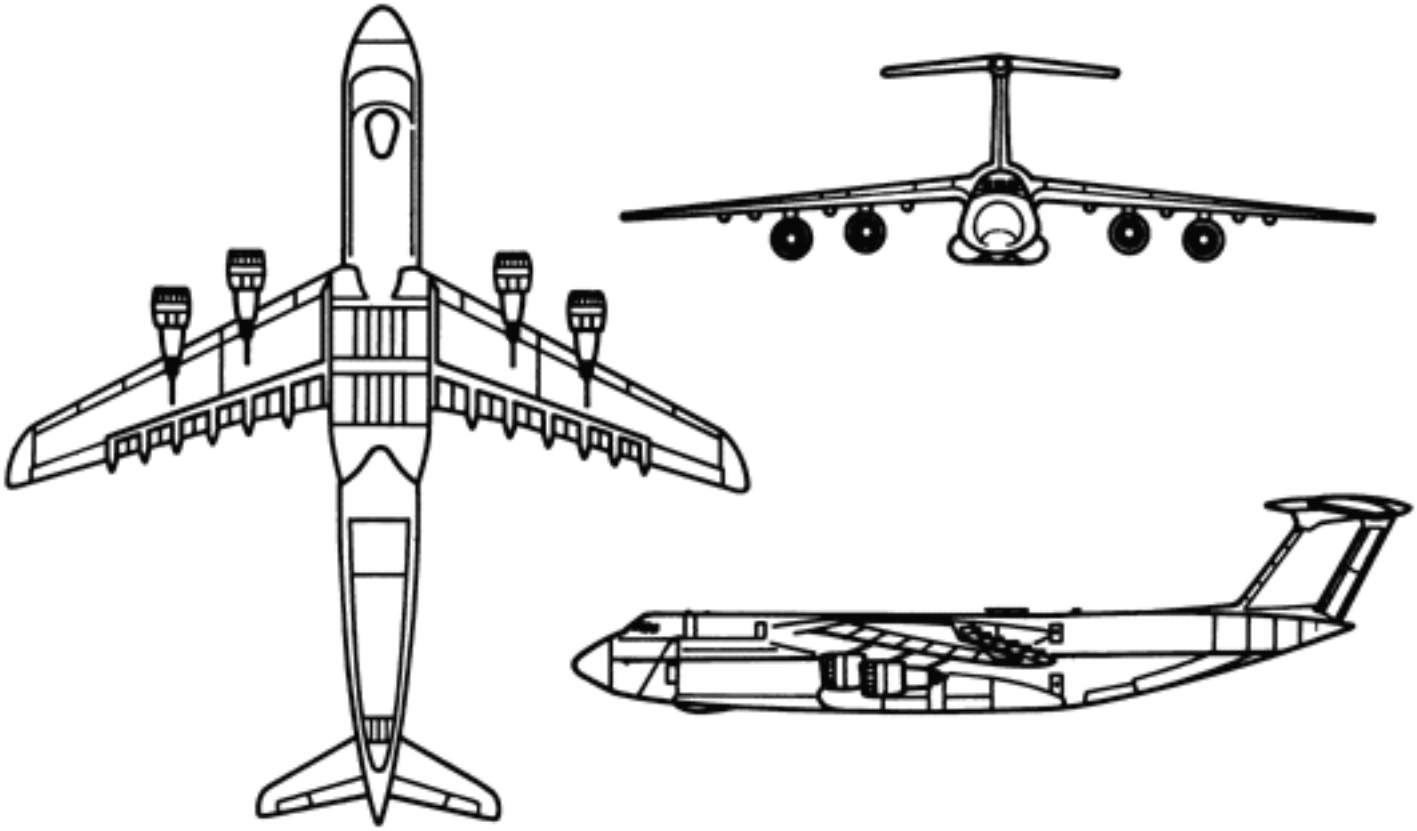
WEFT DESCRIPTION

Wings. High-mounted, straight from body to engines, and equally tapered outboard of engines to the blunt tips.
Engine(s). Two turboprops mounted under the wings' leading edges.
Fuselage. Slab-sided with solid, rounded nose. Stepped cockpit. Upswept rear section.
Tail. Fin is slightly swept-back and tapered with square tip. Flats are equally tapered with blunt tips and high-mounted on the fin forming a T.

USER COUNTRIES

Abu Dhabi, Brazil, Cameroon, Canada, Ecuador, Egypt, Ethiopia, Honduras, Kenya, Mauritania, Mexico, Oman, Peru, Sudan, Tanzania, Togo, United Arab Emirates, USA, Zaire, Zambia.

C-5 GALAXY (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. C-17A Globemaster III, C-141 Starlifter, Il-76 Candid, An-124 Condor.
Crew. Six.
Role. Heavy-transport (345 equipped troops), heavy-cargo (armored vehicles, weapons, helicopters).
Armament. Usually none.
Dimensions. Length: 247 ft, 10 in (75.54 m). Span: 222 ft, 8 in (67.88 m).

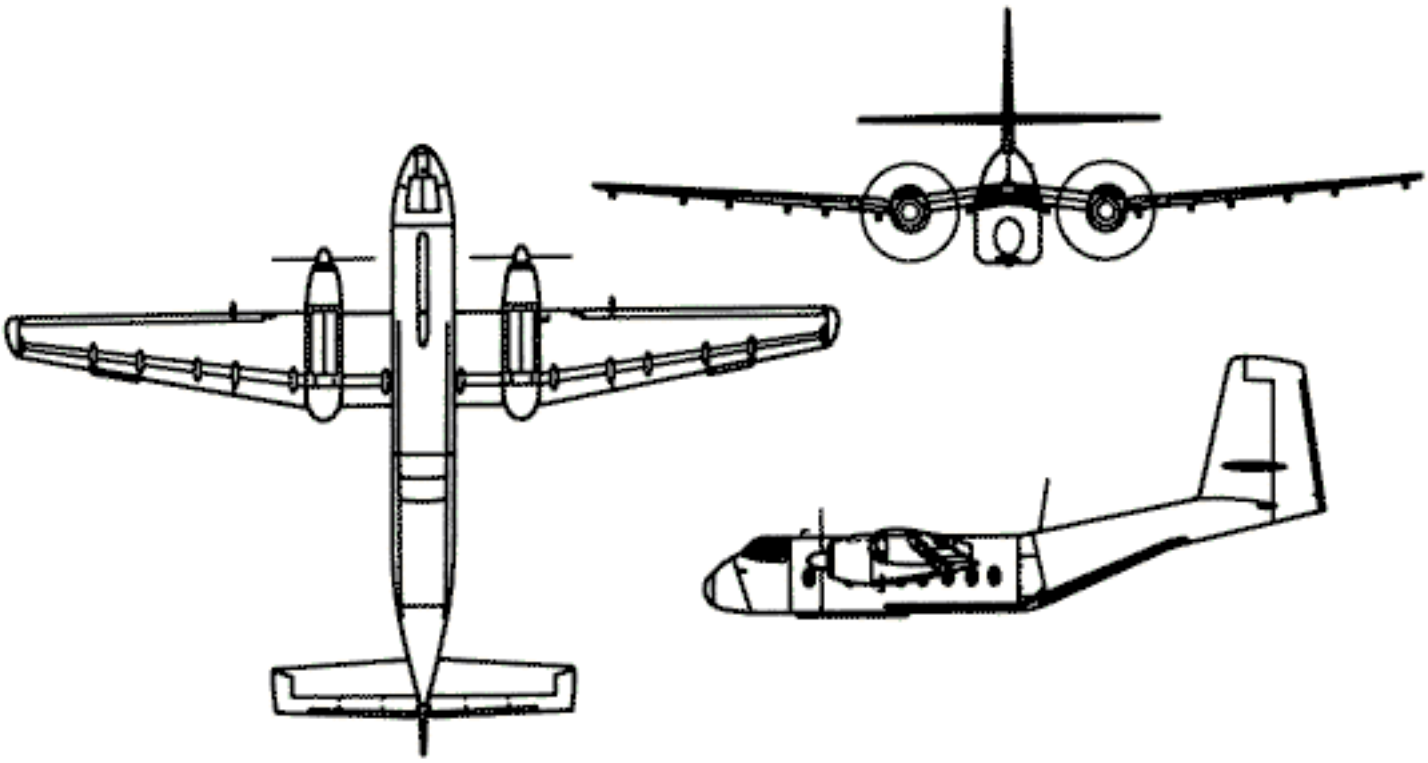
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with curved tips and negative slant.
Engine(s). Four turbofans, suspended on pylons, and extending forward of the wings' leading edges. Round air intakes.
Fuselage. Large, cigar-shaped, and tapered to tail section. Slightly tapered, rounded nose. Stepped cockpit. Landing gear bulges at lower midsection. Upswept rear section.
Tail. Swept-back, tapered tail flats and high-mounted on a swept-back, tapered tail fin forming a T.

USER COUNTRY

USA.

CARIBOU, C-7A (DE HAVILLAND CANADA)



GENERAL DATA

Country of Origin. Canada (DHC-4A, CC-108).
Similar Aircraft. Buffalo C-8A, DHC-5.
Crew. Three.
Role. STOL utility transport (32 equipped troops, 1/4-ton trucks).
Armament. Usually none.
Dimensions. Length: 72 ft, 7 in (22.14 m). Span: 95 ft, 2 in (29.16 m).

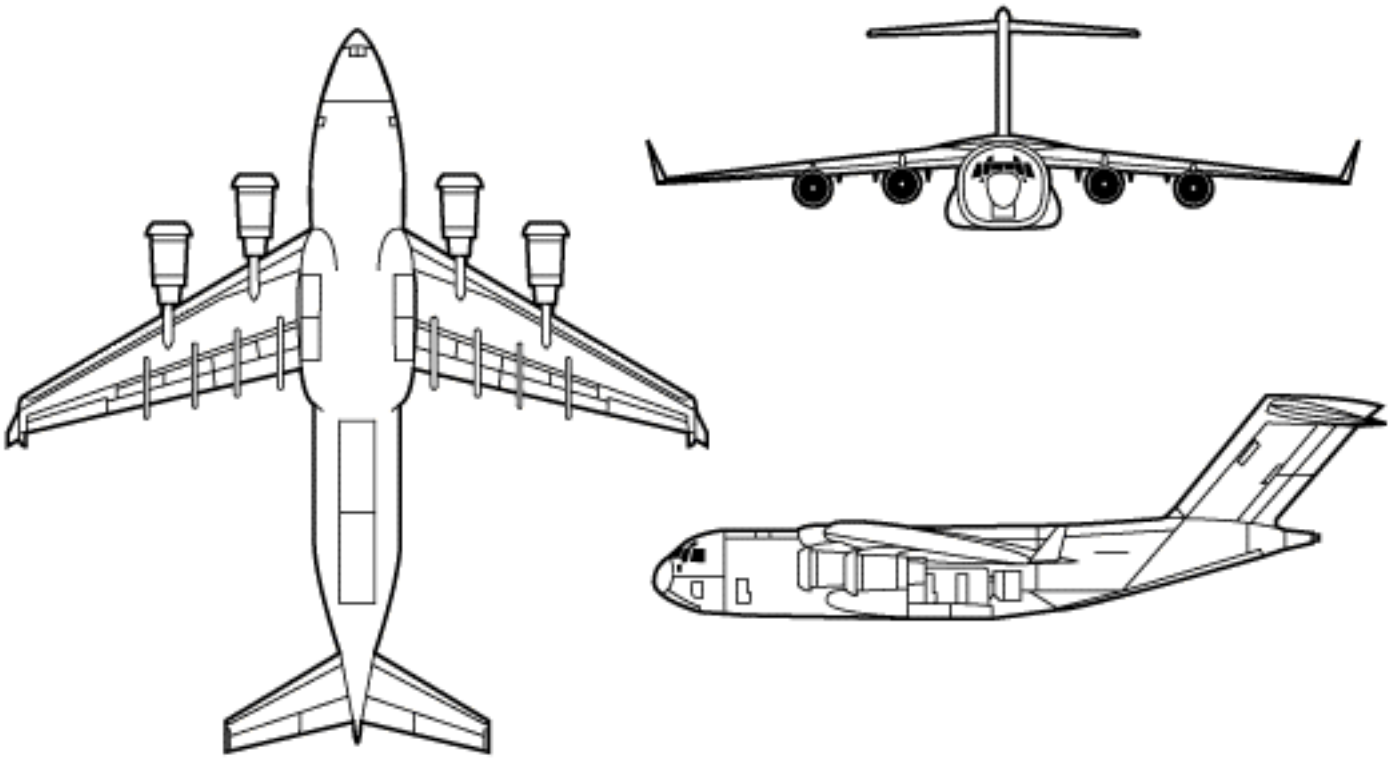
WEFT DESCRIPTION

Wings. High-mounted with straight leading edge and forward-tapered trailing edge from engines to the blunt tips.
Engine(s). Two piston engines mounted in wings' leading edges. Engine nacelles extend beyond leading edges.
Fuselage. Slab-sided with solid, rounded nose. Stepped cockpit. Upswept rear section.
Tail. Flats mid- to low-mounted on tail fin and tapered with blunt tips. Large fin tapered with blunt tip.

USER COUNTRIES

Ecuador, India, Malaysia, Spain, Thailand, USA.

C-17A GLOBEMASTER III (McDONNELL DOUGLAS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. C-5 Galaxy, Il-76 Candid, C-141B Starlifter.
Crew. Five with loadmaster.
Role. Long-range and intra-theatre heavy cargo transport (troops, heavy equipment, helicopters).
Armament. None.
Dimensions. Length: 174 ft (53.04 m). Span: 165 ft (50.29 m).

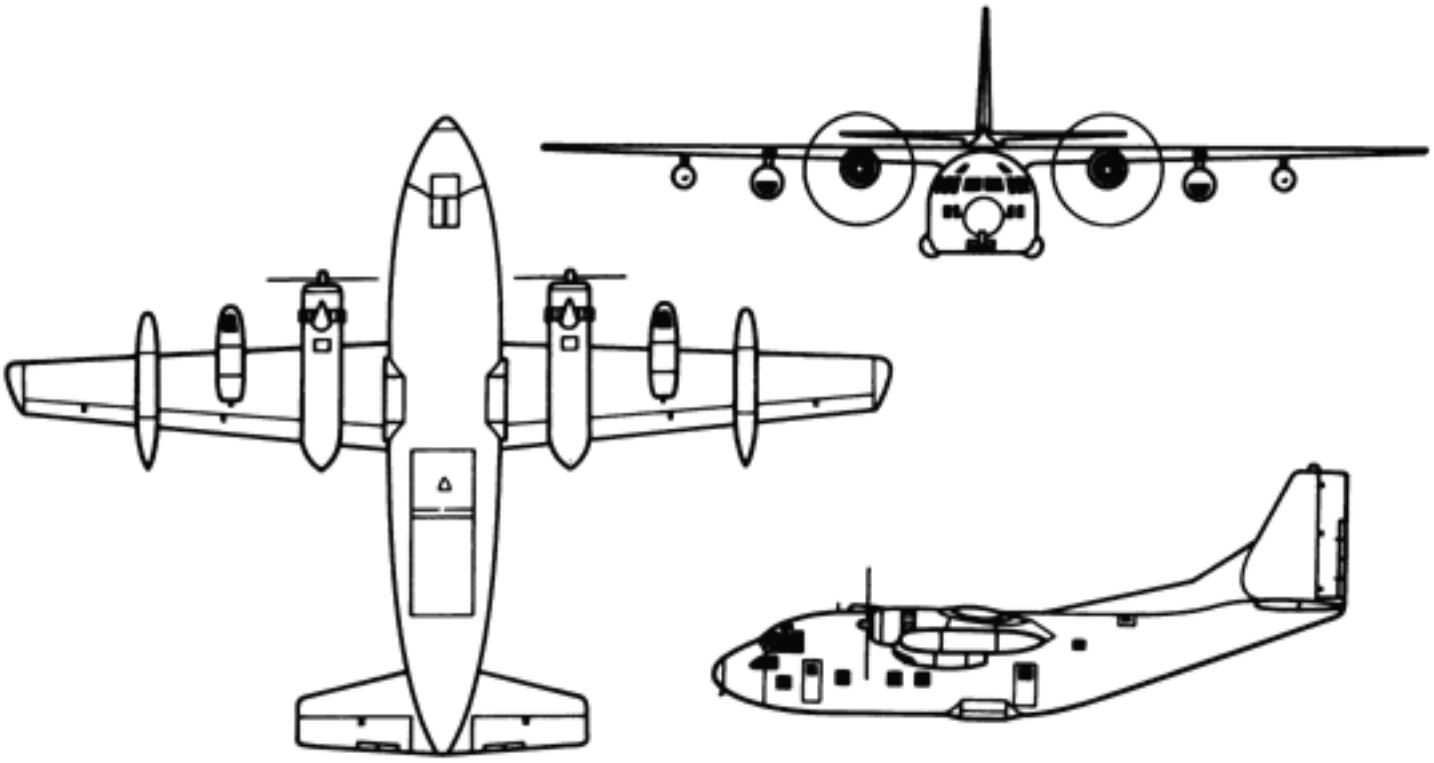
WEFT DESCRIPTION

Wings. High-mounted, swept-back, tapered, negative slant. Winglets at wing tips.
Engine(s). Four turbofans mounted on pylons under wings. Round intakes.
Fuselage. Round and tapers to tail cone. Upswept rear section. Flush cockpit and a round nose.
Tail. Fin swept-back and untapered. Flats swept-back, tapered, mounted high on fin forming a "T".

USER COUNTRIES

USA.

C-123 PROVIDER (FAIRCHILD)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. G.222, C-160 Transall,
Aviocar C-212.
Crew. Four.
Role. STOL transport, cargo (60 equipped troops).
Armament. Usually none.
Dimensions. Length: 76 ft, 3 in (23.93 m). Span: 110 ft (33.53 m).

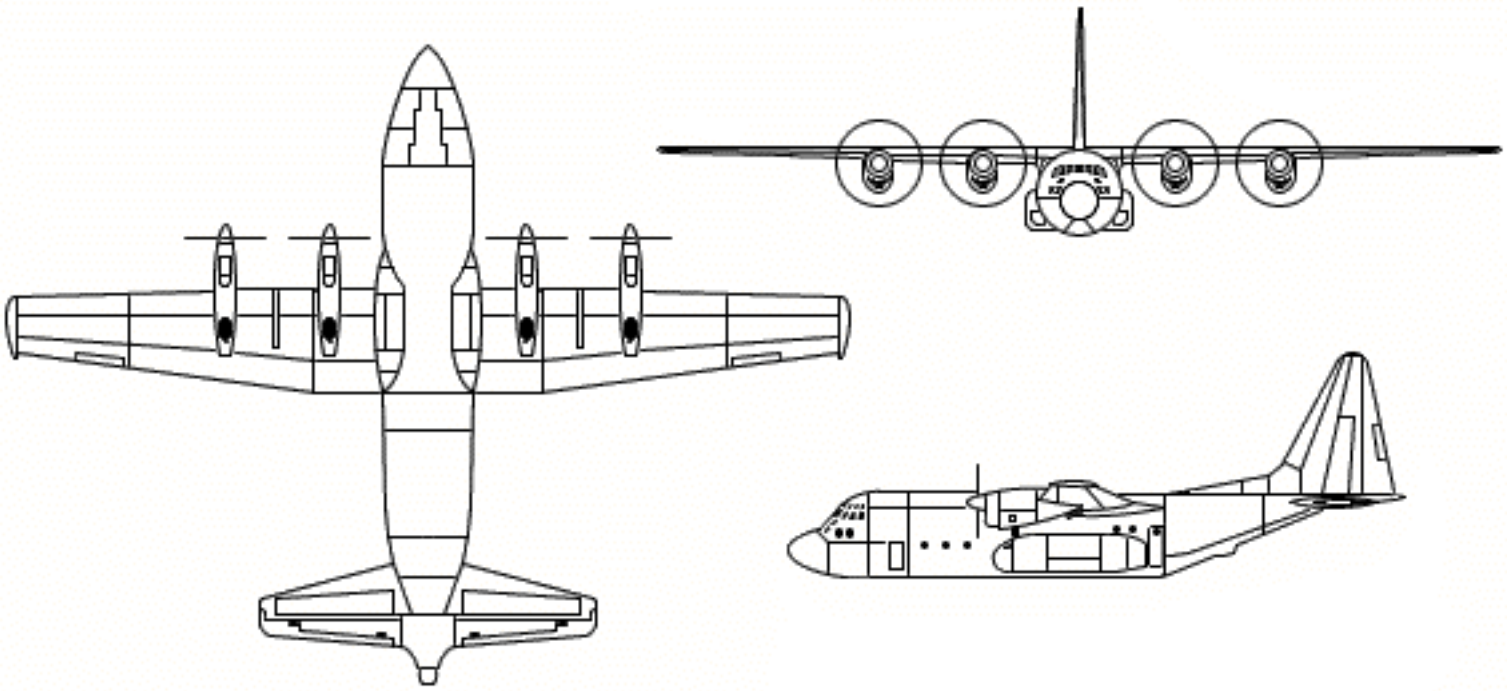
WEFT DESCRIPTION

Wings. High-mounted and unequally tapered with blunt tips.
Engine(s). Two piston engines mounted under the wings. Two jet engines mounted under the wings outboard of the piston engines or the wing tips on some models.
Fuselage. Wide, cigar-shaped. Upswept rear section and solid, rounded nose. Stepped cockpit.
Tail. Back-tapered fin with square tip and a large, angular fairing. Flats are high-mounted on the body and unequally tapered with square tips.

USER COUNTRIES

Canada, Egypt, El Salvador, Honduras, South Korea, Taiwan, Thailand, USA, Venezuela.

C-130 HERCULES (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. An-12 Cub, C-160 Transall, G.222.
Crew. Four.
Role. Transport, cargo (92 equipped troops, light-tactical vehicles), airdrop, low-level extraction, air refueling, reconnaissance, gunship.
Armament. Usually none, except AC-130G gunship.
Dimensions. Length: 97 ft, 9 in (29.78 m). Span: 132 ft, 7 in (40.41 m).

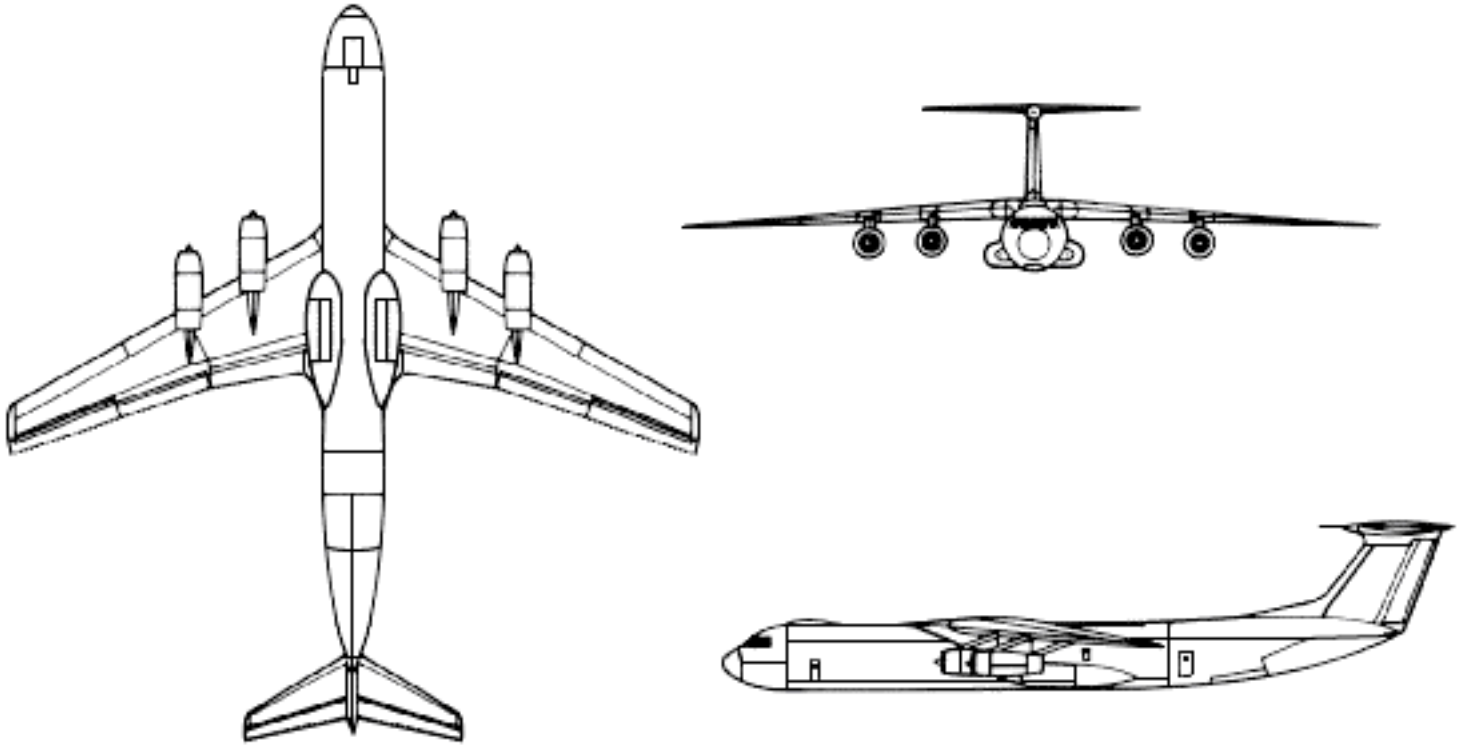
WEFT DESCRIPTION

Wings. High-mounted with straight leading edges, forward tapered trailing edges, and blunt tips.
Engine(s). Four turboprops mounted under and extending beyond wings' leading edges.
Fuselage. Wide and circular with solid, blunt nose. Stepped cockpit. Upswept rear section.
Tail. Flats equally tapered and high-mounted on the body. Tall tail fin tapered with a blunt tip.

USER COUNTRIES

Algeria, Argentina, Australia, Belgium, Bolivia, Brazil, Cameroon, Canada, Chile, Colombia, Denmark, Ecuador, Egypt, France, Greece, Honduras, Indonesia, Iran, Israel, Italy, Japan, Jordan, Libya, Malaysia, Mexico, Morocco, New Zealand, Niger, Nigeria, Yemen, Norway, Oman, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Singapore, Africa, Korea, Spain, Sudan, Sweden, Taiwan, Thailand, Turkey, UAE, UK, USA, Venezuela, Vietnam, Zaire.

C-141B STARLIFTER (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Il-76 Candid, C-5A Galaxy, C-17A Globemaster III.
Crew. Four.
Role. Transport, cargo (154 equipped troops, tactical vehicles, and weapons).
Armament. Usually none.
Dimensions. Length: 168 ft, 4 in (51.30 m). Span: 160 ft (48.76 m).

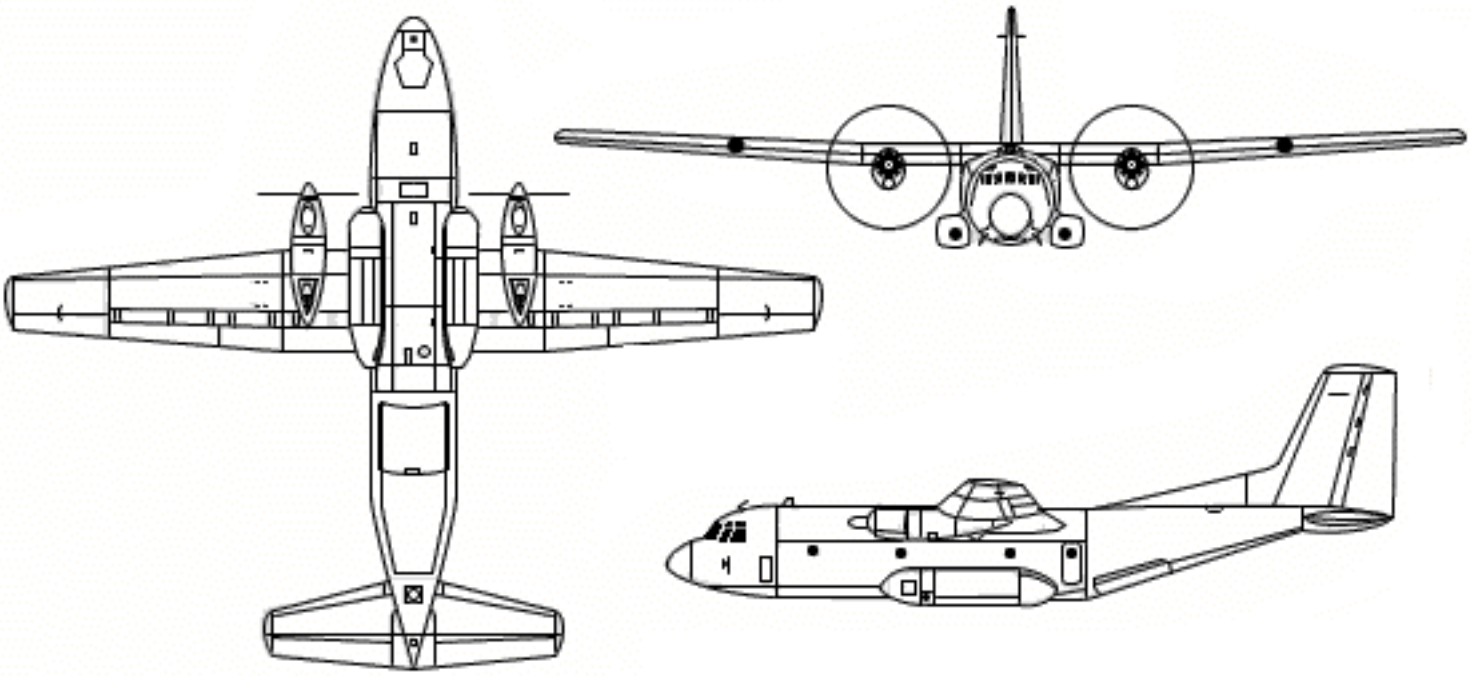
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered. Negative slant and blunt tips.
Engine(s). Four turbofans suspended from pylons under the wings. Engines extend forward of the wings' leading edges.
Fuselage. Cigar-shaped and tapered to the rear. Solid, rounded nose and flush cockpit. Landing gear bulges at lower midsection.
Tail. Swept-back and tapered flats mounted high on a swept-back and tapered tail fin forming a T. Small fairing in leading edge of the fin.

USER COUNTRY

USA.

C-160 TRANSALL (AEROSPATIALE, MBB)



GENERAL DATA

Countries of Origin. France, Germany.
Similar Aircraft. G.222, C-123 Provider, Aviocar C-212, C-130 Hercules, An-12 Cub.
Crew. Three.
Role. Transport, cargo (93 equipped troops, tactical vehicles), airdrop, EW, surveillance, airborne command.
Armament. Usually none.
Dimensions. Length: 106 ft, 3 in (32.4 m). Span: 131 ft, 3 in (40 m).

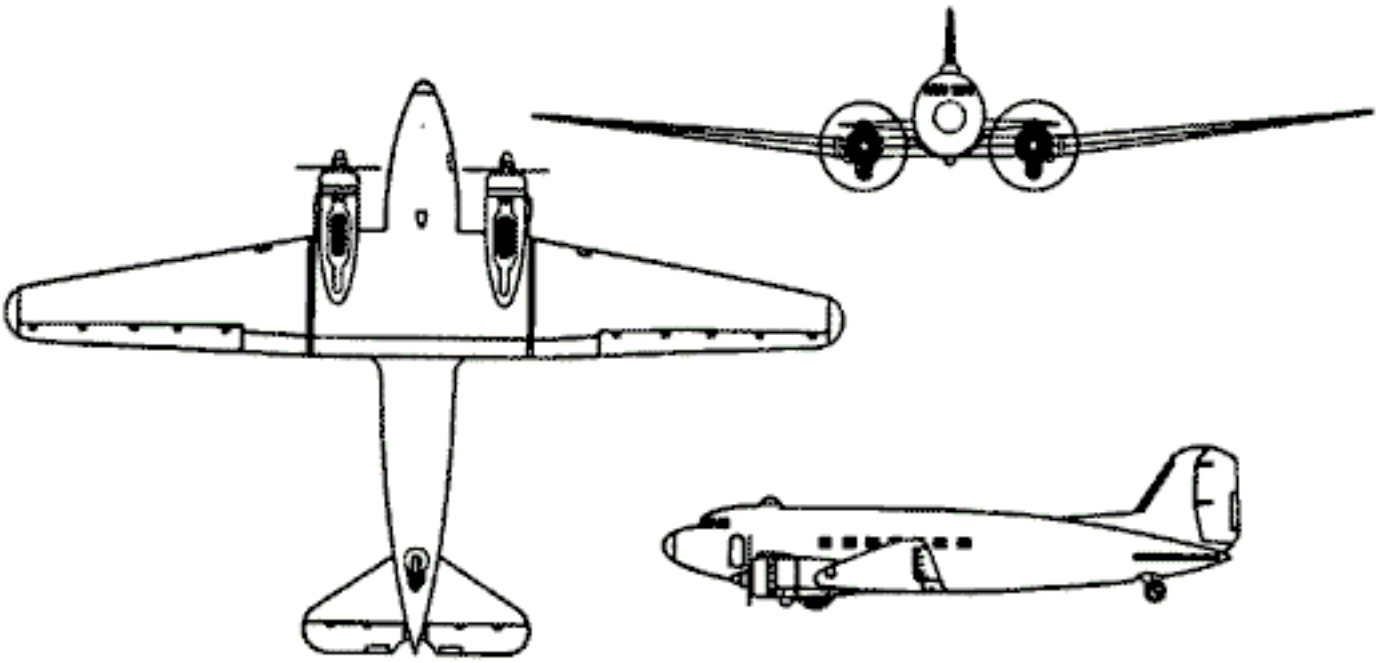
WEFT DESCRIPTION

Wings. High-mounted and equally tapered outboard of engines with blunt tips.
Engine(s). Two turboprops mounted under and extend beyond wings' leading edges.
Fuselage. Long, thick, and tapered to the rear with round, solid nose. Stepped cockpit and upswept tail section.
Tail. Flats mid-mounted on thinned body, equally tapered with blunt tips. Fin is tall and tapered with a blunt tip and a fairing in the leading edge.

USER COUNTRIES

France, Germany, South Africa, Turkey.

DC-3 DAKOTA (DOUGLAS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. I1-14 Crate.
Crew. Five.
Role. Medium-transport, cargo (35 equipped troops).
Armament. Usually none except modified gunship.
Dimensions. Length: 64 ft, 5 in (19.63 m). Span: 95 ft (28.96 m).

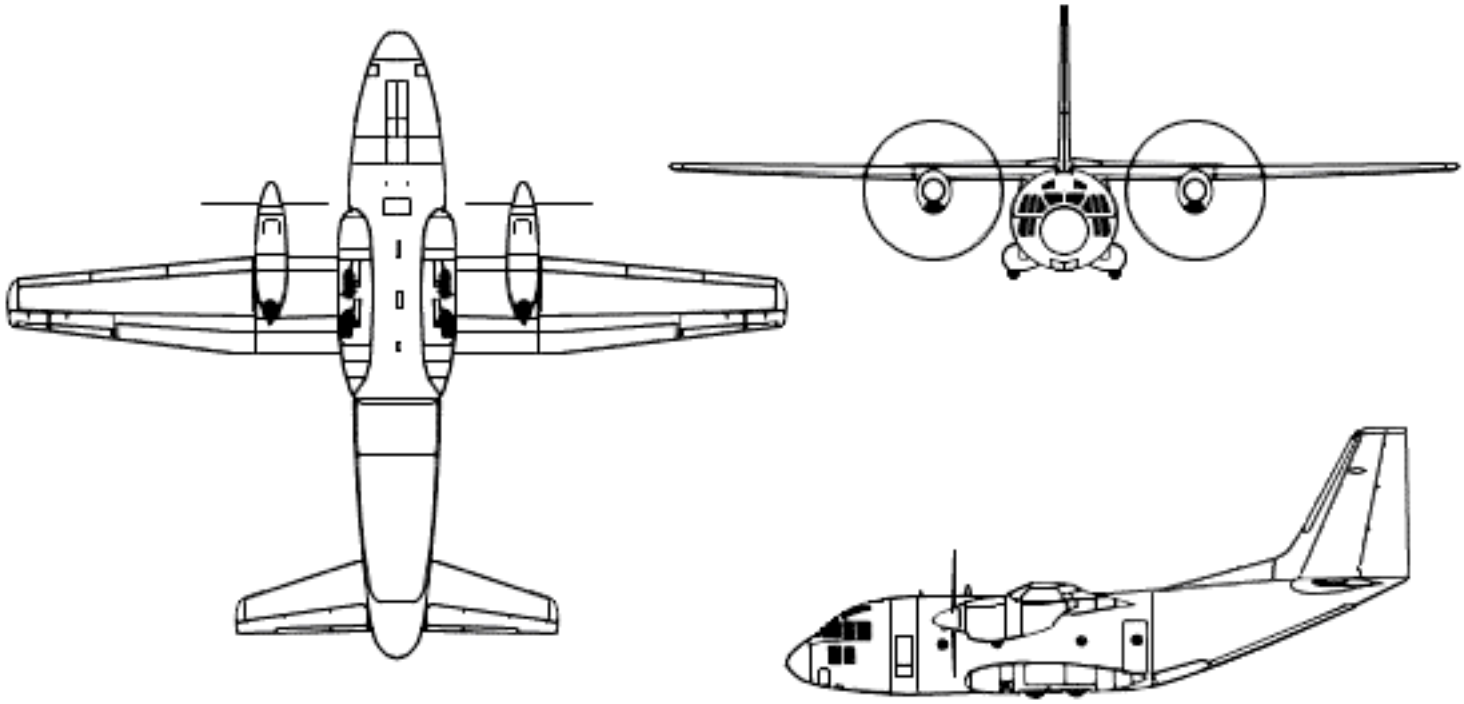
WEFT DESCRIPTION

Wings. Low-mounted with unequally tapered leading and trailing edge. Has rounded tips and positive slant.
Engine(s). Two piston engines mounted in the wing's leading edges. There are also turboprop versions.
Fuselage. Club-shaped and tapered to the rear. Solid, round nose and a stepped cockpit.
Tail. Fin tapered with a rounded tip. Flats are mid-mounted on the body, with round tips.

USER COUNTRIES

Angola, Argentina, Bolivia, Burkina Faso, Burundi, Central Africa Republic, Chad, Colombia, Congo, Dominican Republic, El Salvador, Greece, Guatemala, Haiti, Indonesia, Israel, Japan, Mexico, Mozambique, Papua New Guinea, Paraguay, Rwanda, South Africa, Taiwan, Thailand, Turkey, Venezuela, Zambia.

G.222 (AERITALIA)



GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. C-160 Transall, C-123 Provider, Aviocar C-212, C-130 Hercules, An-12 Cub.
Crew. Three.
Role. STOL transport, cargo (44 equipped troops).
Armament. Usually none.
Dimensions. Length: 74 ft, 5 in (22.7 m). Span: 94 ft, 2 in (28.7 m).

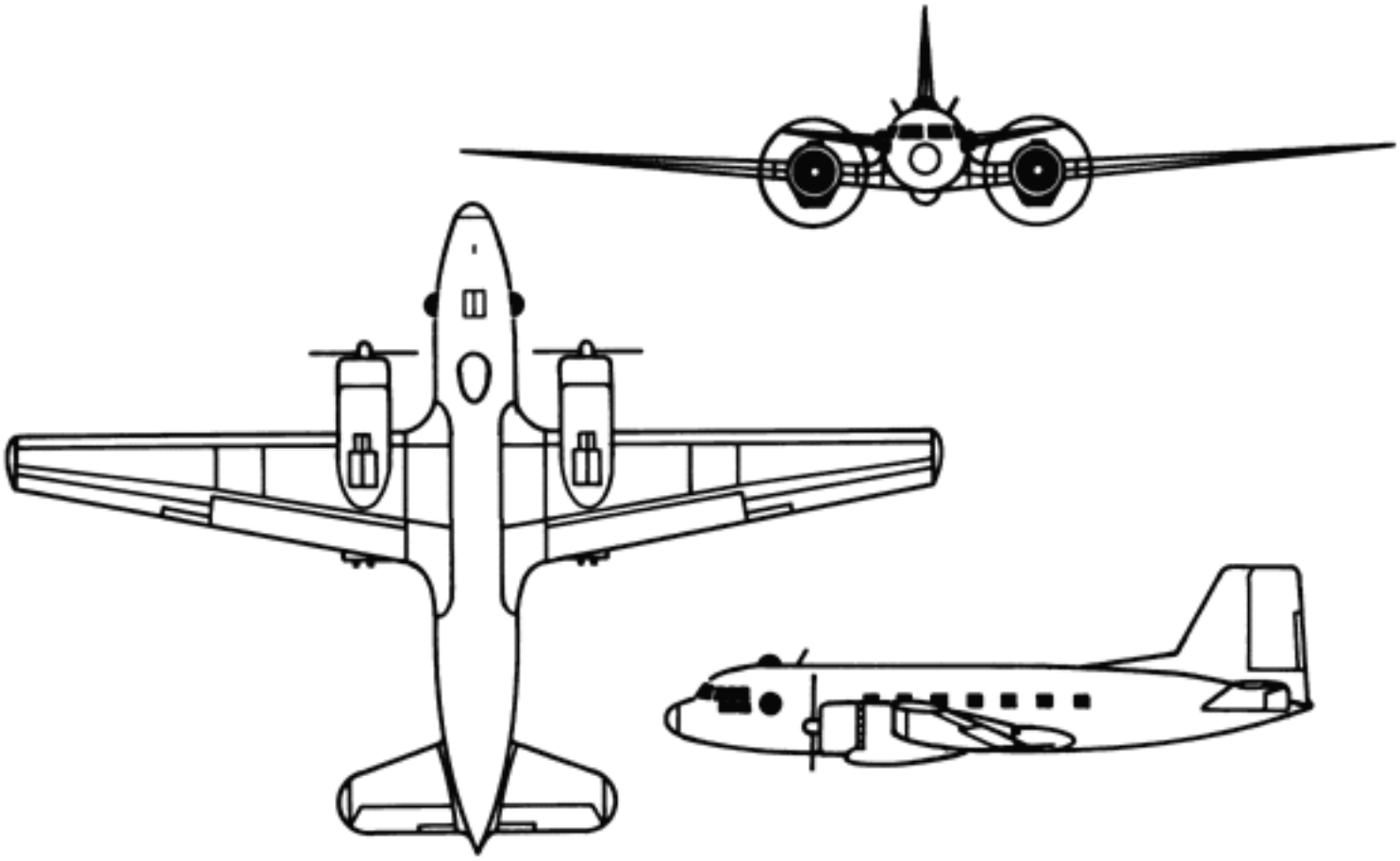
WEFT DESCRIPTION

Wings. High-mounted and equally tapered outboard of engines with blunt tips.
Engine(s). Two turboprops mounted beneath and extending beyond the wings' leading edges.
Fuselage. Short, round, and tapered to the rear. Rounded nose and stepped cockpit. Upswept rear section.
Tail. Flats high-mounted on fuselage. Tapered leading edges with blunt tips. Fin is tall and back-tapered with a blunt tip and fairing in the leading edge.

USER COUNTRIES

Italy, Libya, Somalia, United Arab Emirates, Nigeria, Venezuela.

Il-14 CRATE (ILYUSHIN)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. DC-3 Dakota.
Crew. Five.
Role. Medium-transport, cargo (five equipped troops).
Armament. Usually none.
Dimensions. Length: 73 ft, 2 in (22.3 m). Span: 104 ft (31.70 m).

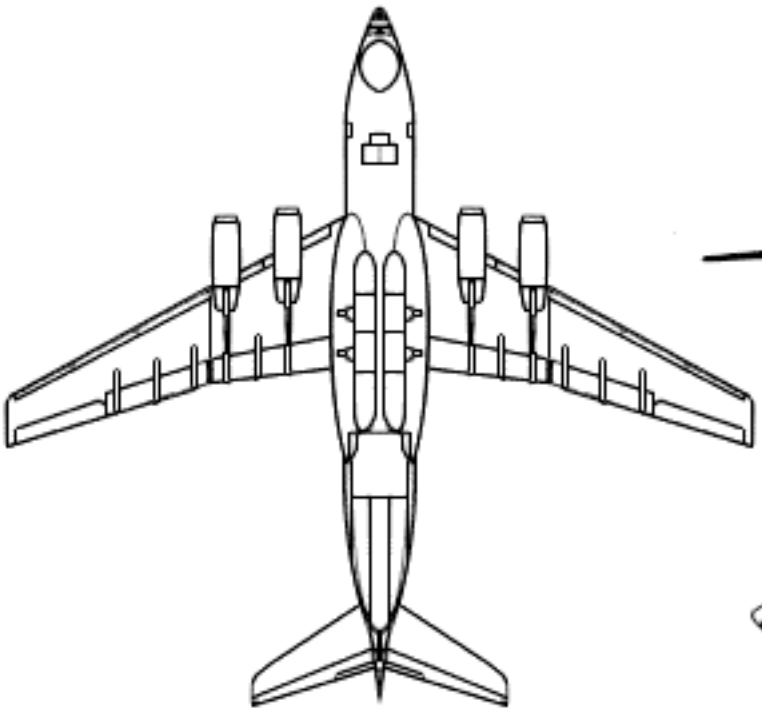
WEFT DESCRIPTION

Wings. Low-mounted and have straight leading edges and forward-tapered trailing edges with blunt tips.
Engine(s). Two piston engines mounted in and extending beyond the wings' leading edges.
Fuselage. Long, cigar-shaped, and tapered to the rear section. Rounded, solid nose and stepped cockpit.
Tail. Flats mid-mounted on body and back-tapered with rounded tips. Large fin, tapered, with a square tip and a small fairing in the leading edge.

USER COUNTRIES

Afghanistan, Albania, Bulgaria, CIS, Chad, Cuba, Czech Republic, Iraq, North Korea, People's Republic of China, Poland, Romania, South Yemen, Vietnam.

Il-76 CANDID (ILYUSHIN)



GENERAL DATA

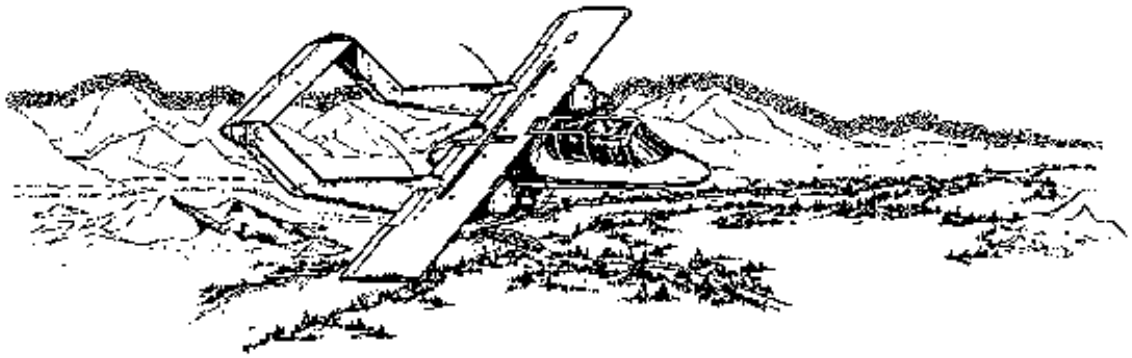
Country of Origin. CIS (formerly USSR).
Similar Aircraft. C-141B Starlifter, C-5 Galaxy, C-17A Globemaster III.
Crew. Seven.
Role. Heavy-transport, cargo (tanks, guns, and other equipment).
Armament. Rear gun turret on military model.
Dimensions. Length: 152 ft, 10 in (46.6 m). Span: 165 ft, 8 in (50.6 m).

WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with blunt tips. Slight negative slant.
Engine(s). Four turbofans mounted on pylons under and extending beyond wings' leading edges.
Fuselage. Long, round, and tapering to the rear. Rounded nose with radome on the chin. Bottom portion of nose glassed-in. Flush cockpit.
Tail. Flats swept-back, tapered, and high-mounted on a swept-back, tapered tail fin forming a T.

USER COUNTRIES

CIS, Cuba, Iraq, India, Libya, Syria.

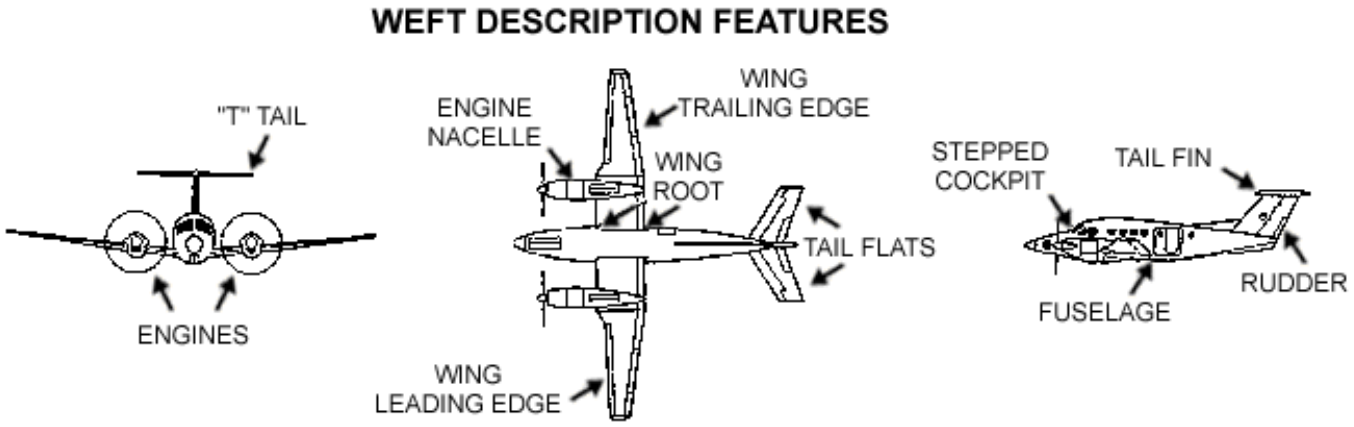


CHAPTER 9

Utility Aircraft

This chapter shows several examples of utility type aircraft. There are literally hundreds of aircraft types that could be used in this function. Included are utility types manufactured specifically for military purposes, although other examples are shown of conversions from civilian to military or military to civilian uses.

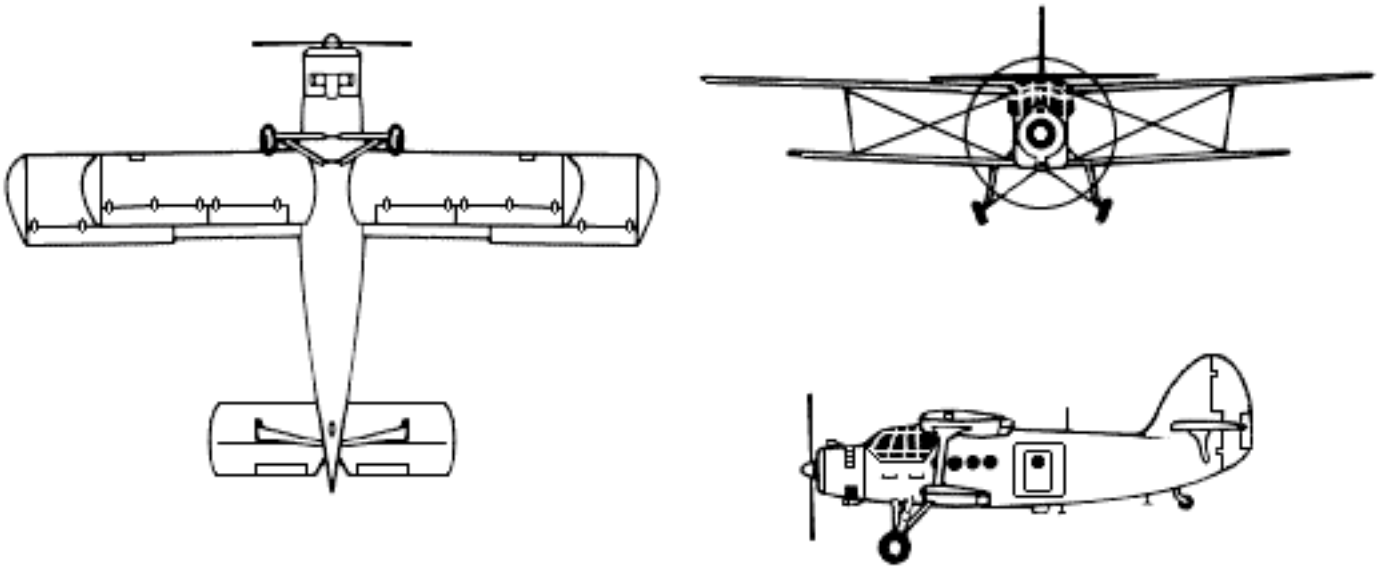
For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. The following illustration shows utility aircraft WEFT description features. Line drawings are not to scale.



Chapter 9 Aircraft List

An-2 Colt	O-2 Skymaster	Skyvan 3M
C-12 Super King Air, B200	OV-10 Bronco	U-6A Beaver
C-23A Sherpa	Skyservant	U-8F Seminole, Queen Air
King Air	PC-7	UV-18A Twin Otter
O-1 Bird Dog	.	.

An-2 COLT (ANTONOV)



GENERAL DATA

Countries of Origin. CIS (formerly USSR), Poland.
Similar Aircraft. U-6A Beaver, OV-1 Mohawk, OV-10 Bronco
Crew. Two.
Role. Light-transport (10 equipped troops), general utility.
Armament. Usually none.
Dimensions. Length: 41 ft, 9 in (12.75 m). Span: 59 ft, 8 in (18.19 m).

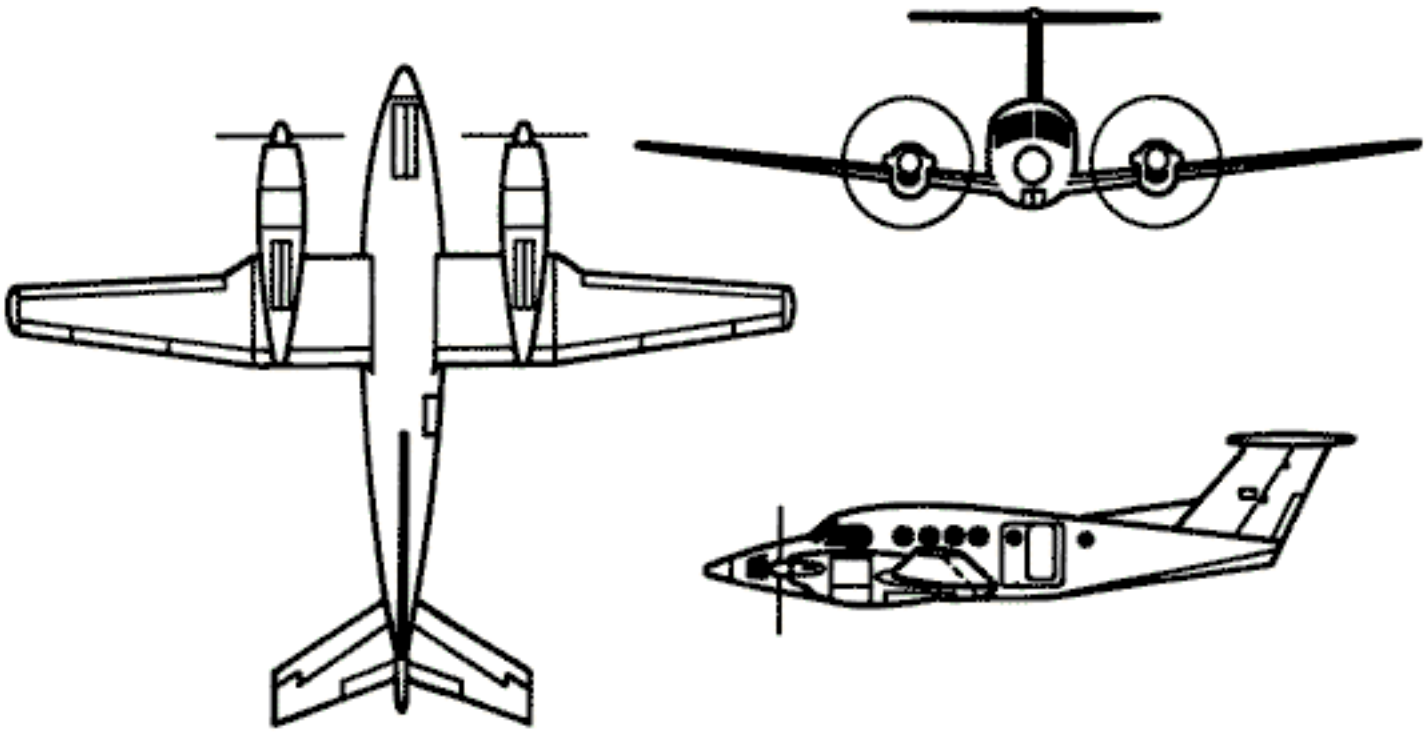
WEFT DESCRIPTION

Wings. Biplane and rectangular-shaped with curved tips. One high-mounted and one low-mounted (shorter), connected and braced by two struts.
Engine(s). One radial piston engine (some versions are turboprop) mounted in the nose.
Fuselage. Short and thick with solid, blunt nose. Stepped cockpit. Fixed landing gear.
Tail. Fin tapered with large, round tip. Flats are low-mounted on the tail fin and rectangular-shaped with curved tips.

USER COUNTRIES

Afghanistan, Albania (Y-5), Angola, Benin, Bulgaria, Cambodia, CIS, Cuba, Germany, Iraq, Laos, Mali, Mongolia, Nicaragua, North Korea, People’s Republic of China (Y-5), Poland, Romania, Tanzania, Vietnam.

C-12 SUPER KING AIR, B200 (BEECHCRAFT)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. King Air, U-8F Seminole (Queen Air).
Crew. One or two.
Role. Utility, light-transport, surveillance.
Armament. Usually none.
Dimensions. Length: 43 ft, 9 in (13.32 m). Span: 54 ft, 6 in (16.6 m).

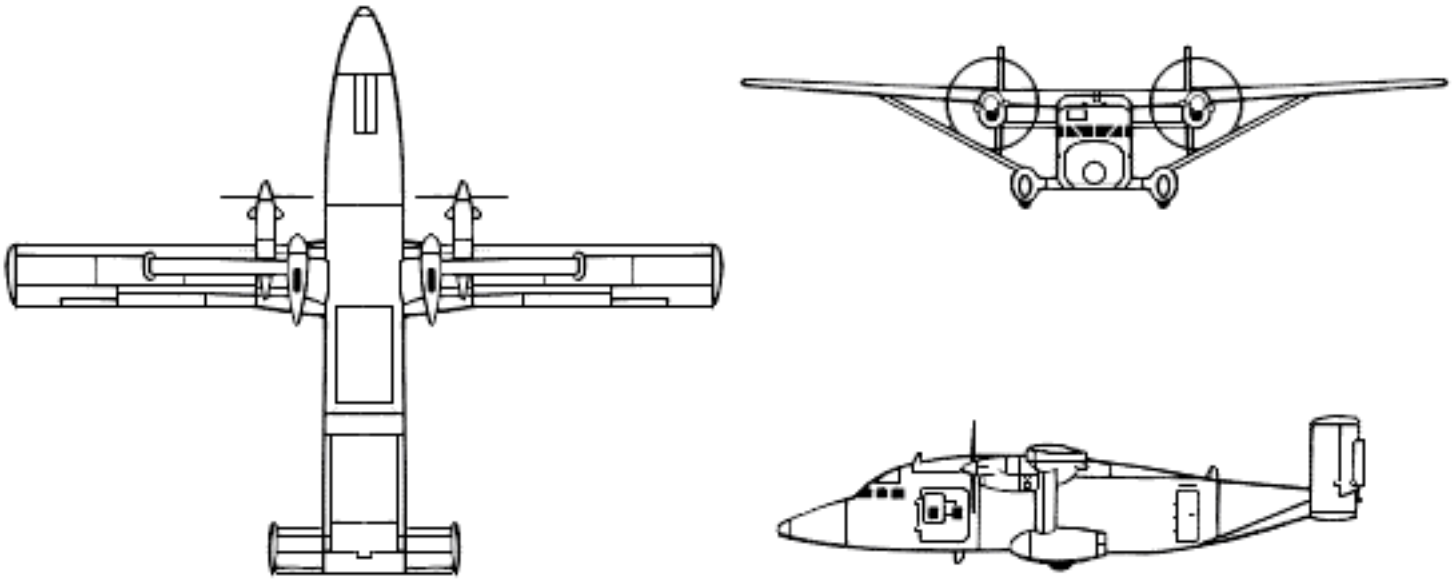
WEFT DESCRIPTION

Wings. Low-mounted, straight to engines, and equally tapered from engines to blunt tips. Positive slant.
Engine(s). Two turboprops mounted in and extending forward of the wings' leading edges.
Fuselage. Long, tubular, and tapered to the rear and nose. Stepped cockpit.
Tail. Swept-back and tapered tail flats with blunt tips and high-mounted on a swept-back tail fin forming a T. Fairing in leading edge.

USER COUNTRIES

Algeria, Argentina, Bolivia, Greece, Guatemala, Guyana, Ireland, Ivory Coast, Peru, Sri Lanka, Thailand, Uruguay, USA, Venezuela.

C-23A SHERPA (SHORTS)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. Aviocar C-212, Skyvan 3M, OV-10 Bronco, OV-1 Mohawk.
Crew. Two plus flight mechanic.
Role. Utility transport (nine passengers, vehicles).
Armament. None.
Dimensions. Length: 58 ft (17.7 m). Span: 74 ft, 8 in (22.76 m).

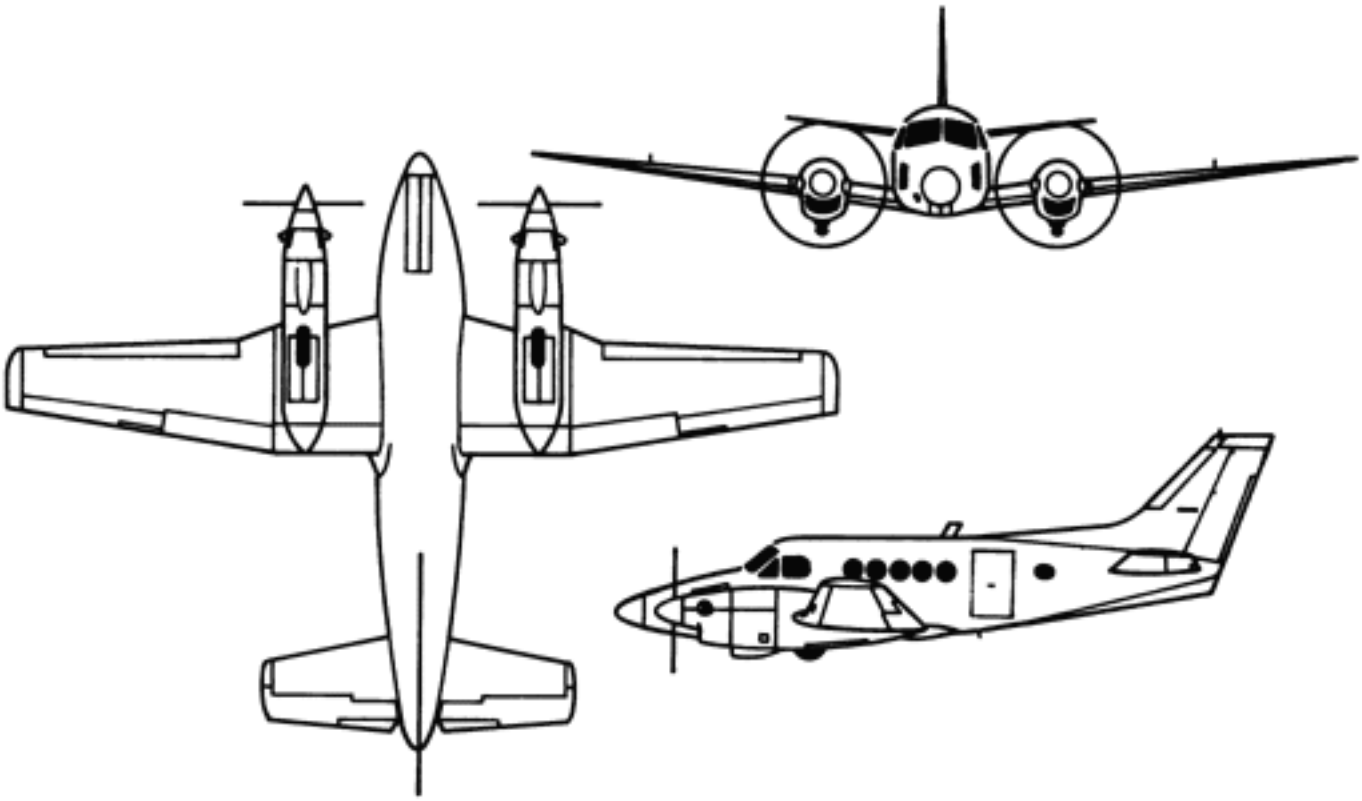
WEFT DESCRIPTION

Wings. High-mounted and rectangular with blunt tips. Struts between wings and landing gear.
Engine(s). Twin turboprops mounted in pods under the leading edges of the wings.
Fuselage. Slabsided. Rectangular from fuselage to tail. Rounded nose. Stepped cockpit.
Tail. Rectangular fins with blunt tips. Fins are mounted on the tips of the flats. Flat is rectangular and high-mounted on the body.

USER COUNTRIES

Thailand, UK, USA.

KING AIR (BEECHCRAFT)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. C-12 Super King Air, U-8 Seminole (Queen Air).
Crew. Two.
Role. Light-transport (16 seats, utility).
Armament. Usually none.
Dimensions. Length: 39 ft, 8 in (12 m). Span: 45 ft, 10 in (14 m).

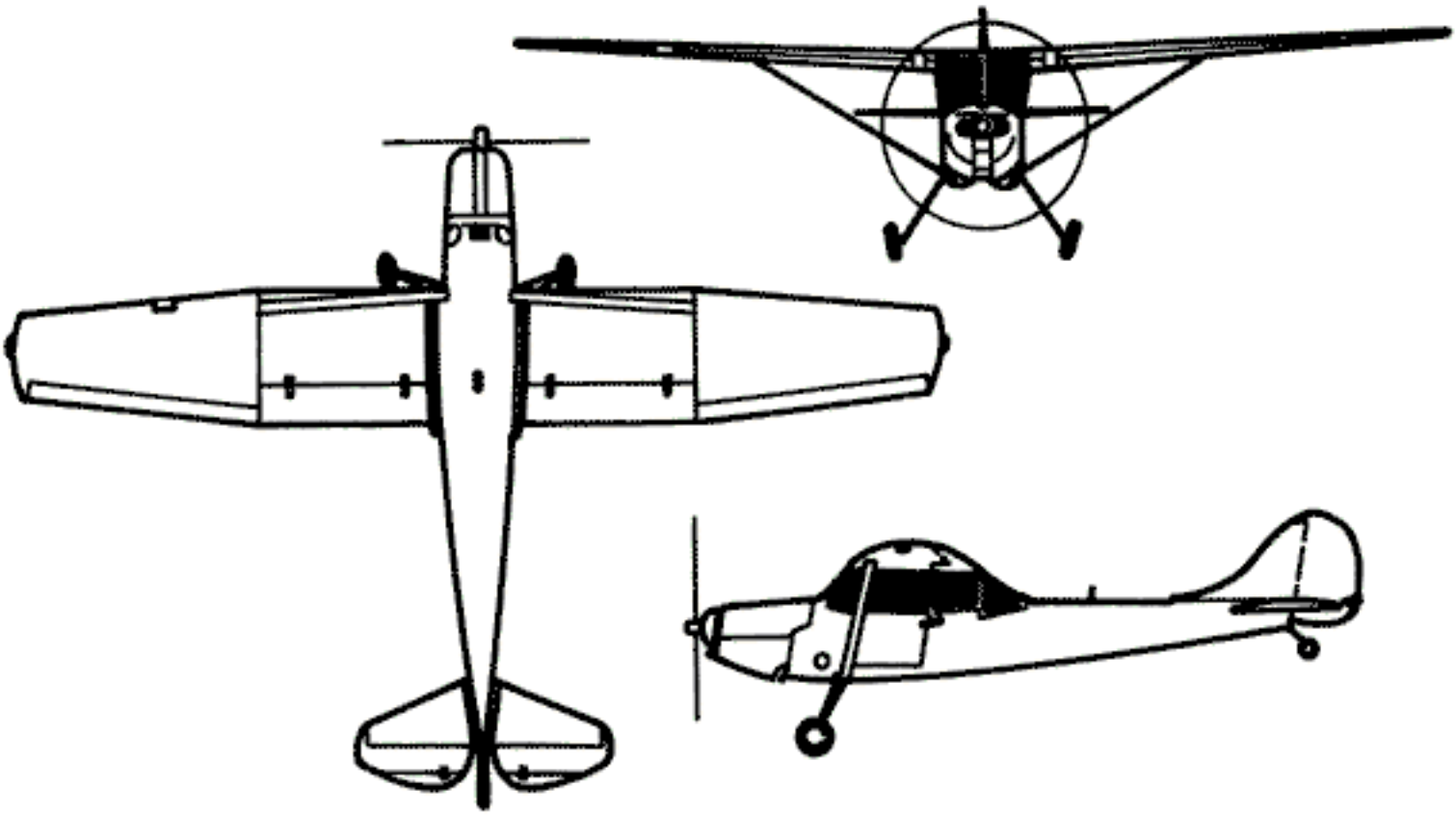
WEFT DESCRIPTION

Wings. Low-mounted and equally tapered outboard of engines with blunt tips. Wide wing roots. Positive slant.
Engine(s). Two turboprops mounted in and extending forward of the wings' leading edges.
Fuselage. Long, tubular, and tapered tail and nose. Stepped cockpit.
Tail. Flats unequally tapered with blunt tips mid-mounted on body with a positive slant. Swept-back and tapered fin with square tip.

USER COUNTRIES

Argentina, Bolivia, Chile, Israel, Jamaica, Japan, Mexico, Morocco, Peru, Sweden, Thailand, USA, Venezuela.

O-1 BIRD DOG (CESSNA)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. S.F. 260W.
Crew. One.
Role. Light-reconnaissance, liaison, training.
Armament. Normally unarmed.
Dimensions. Length: 25 ft, 10 in (7.9 m). Span: 36 ft (11 m).

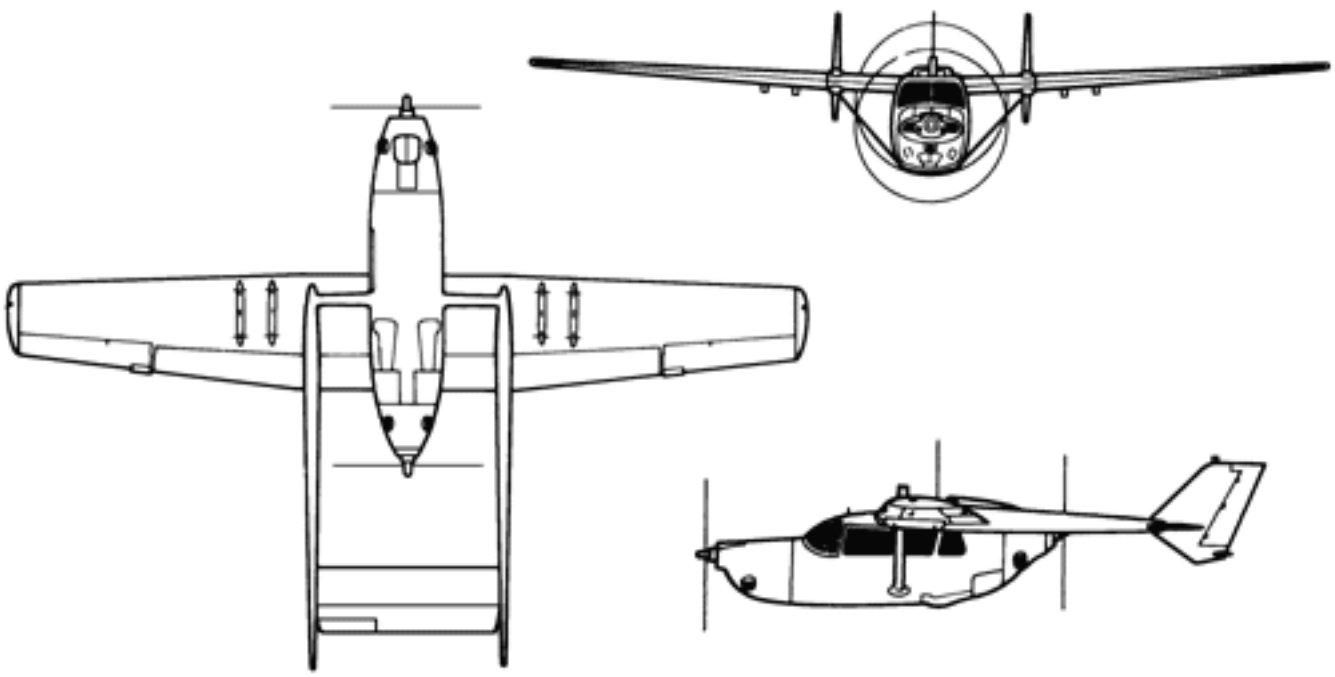
WEFT DESCRIPTION

Wings. High-mounted, straight to midwing, and unequally tapered from midwing to blunt tips.
Engine(s). One piston engine mounted in nose.
Fuselage. Cigar-shaped and tapered to the rear section. Blunt nose. Stepped, glassed-in cockpit. Fixed landing gear.
Tail. Fin is rounded. Flats mounted high on the body and are round and butterfly-shaped.

USER COUNTRIES

Austria, Indonesia, Italy, Norway, Pakistan, South Korea, Taiwan, Turkey, Thailand, USA.

O-2 SKYMASTER (CESSNA)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Skymaster, 335 Model, not in this manual.
Crew. Two.
Role. Observation, liaison, forward air control, psychological warfare.
Armament. Miniguns, rockets.
Dimensions. Length: 29 ft, 9 in (9.6 m). Span: 38 ft, 3 in (11.64 m).

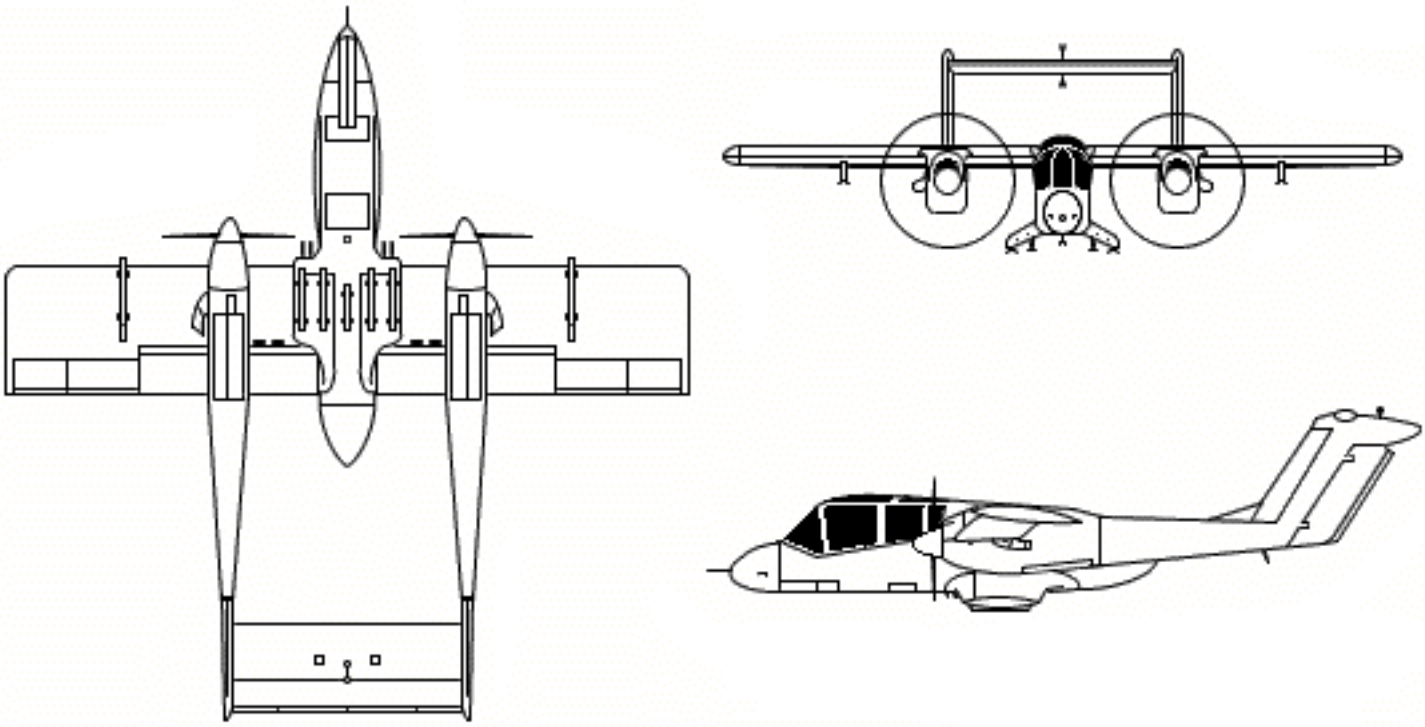
WEFT DESCRIPTION

Wings. High-mounted with straight leading edges and forward-tapered trailing edges from midwing to blunt tips.
Engine(s). Two piston engines, one on the nose and one on the rear of the body.
Fuselage. Stubby, box-like with propellers at each end. Stepped, glassed-in cockpit. Rear of body upswept to tail booms.
Tail. Rectangular tail flat at end of twin tail booms. Swept-back tail fins with blunt tips at tips of tail flat. Fins extend above and below tail flat.

USER COUNTRIES

Central African Republic, Chad, Costa Rica, Dominican Republic, El Salvador, Ethiopia, Guinea-Bissau, Iran, Jamaica, Mauritania, Nicaragua, Niger, Portugal, Sri Lanka, Togo, USA, Venezuela.

OV-10 BRONCO (ROCKWELL INTERNATIONAL)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. OV-1 Mohawk, C-23A Sherpa.
Crew. Two.
Role. Armed reconnaissance; forward air control; quick-response, ground-support.
Armament. Machine guns, rockets, bombs.
Dimensions. Length: 41 ft, 7 in (12.70 m). Span: 40 ft (12.20 m).

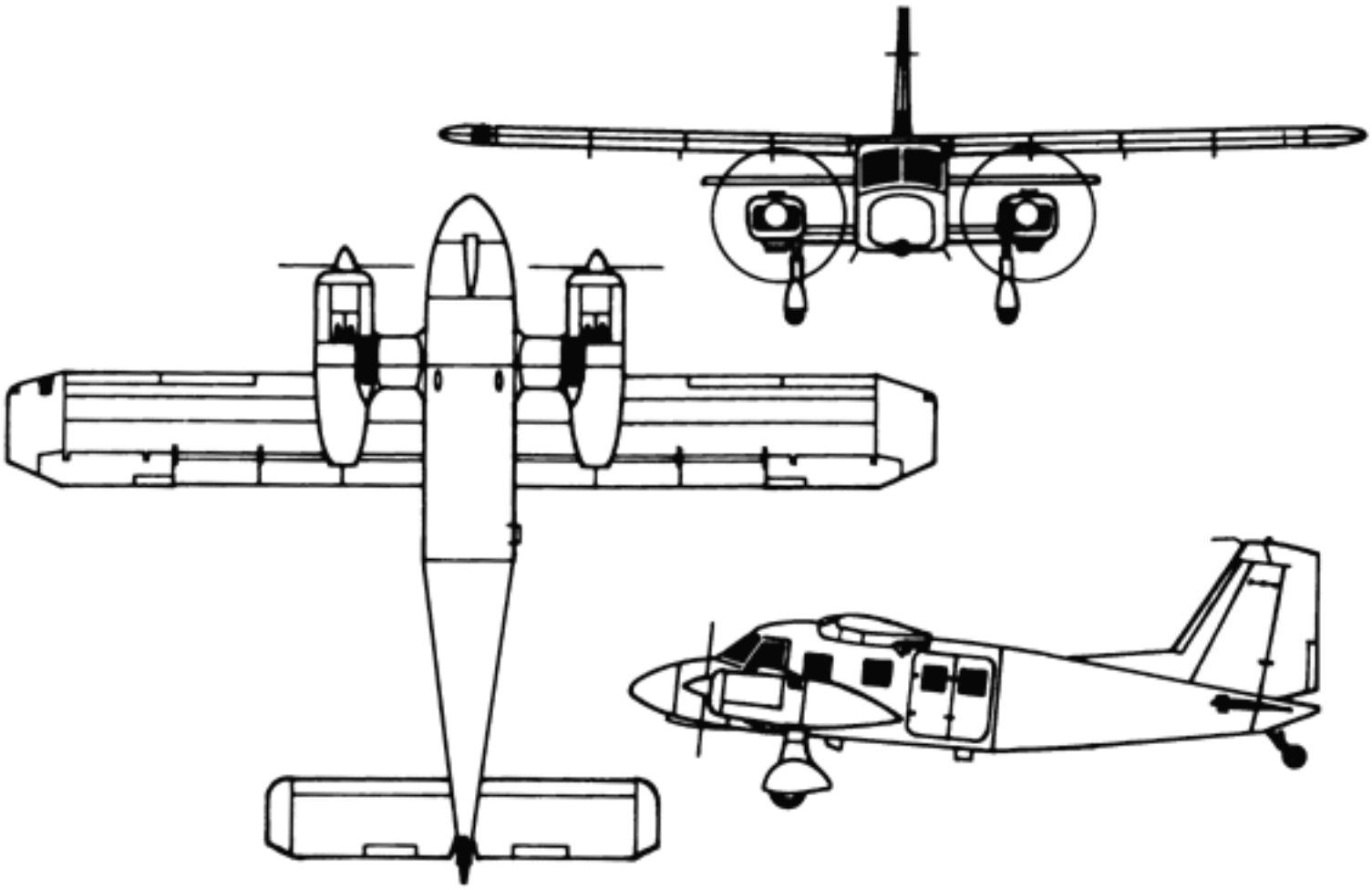
WEFT DESCRIPTION

Wings. High-mounted and rectangular with square tips.
Engine(s). Two turboprops in booms under wings.
Fuselage. Short and oval with glassed-in, stepped canopy.
Tail. Twin tail booms with swept-back fin on each boom. Rectangular tail flat that connects the tail fins at the top.

USER COUNTRIES

Indonesia, Morocco, Thailand, USA, Venezuela.

SKYSERVANT (DORNIER)



GENERAL DATA

Country of Origin. Germany.
Similar Aircraft. UV-18 Twin Otter.
Crew. Two.
Role. STOL light-transport, cargo (fourteen equipped troops).
Armament. Usually none.
Dimensions. Length: 37 ft, 5 in (11.4 m). Span: 51 ft (15.56 m).

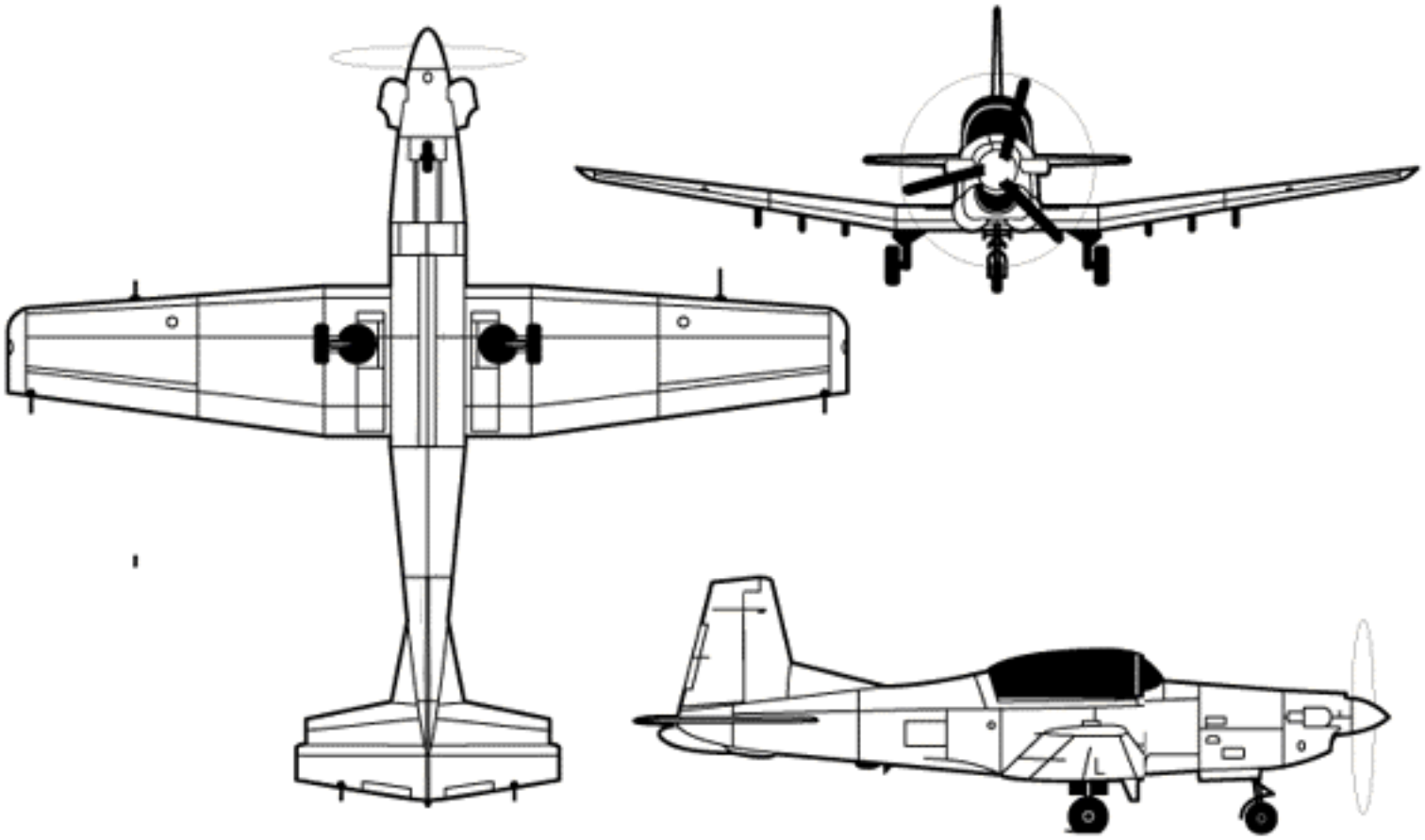
WEFT DESCRIPTION

Wings. High-mounted and rectangular with square tips.
Engine(s). Two piston engines mounted on tips of stubby attachments on lower body. Some are equipped with turboprop engines.
Fuselage. Box-like and tapered to the rear section. Rounded nose and stepped cockpit. Fixed wheel landing gear with streamlined covers.
Tail. Rectangular tail flats mid-mounted on body with square tips. Fin is unequally tapered with a square tip.

USER COUNTRIES

Angola, Benin, Cameroon, Germany, India, Israel, Kenya, Malawi, Morocco, Niger, Nigeria, Oman, Rwanda, Somalia, Spain, Sweden, Turkey, Zambia.

PC-7 (PILATUS)



GENERAL DATA

Country of Origin. Switzerland.
Similar Aircraft. L-39 Albatross, SF.260W Warrior.
Crew. Two-seat.
Role. Turbo-trainer, aerobatic, light attack.
Armament. Six pylons for weapons.
Dimensions. Length: 32 ft, 1 in (9.78 m). Span: 34 ft, 1 in (10.40 m).

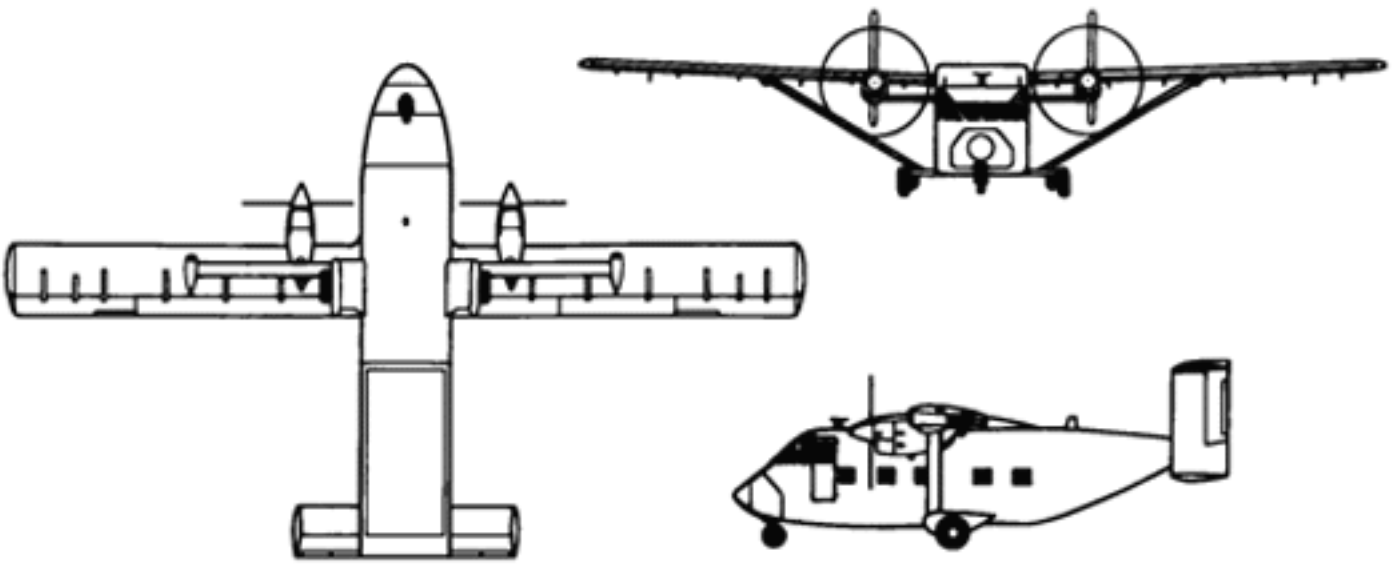
WEFT DESCRIPTION

Wings. Low-mounted, unequally tapered with blunt tips. Positive slant.
Engine(s). Single, turboprop, mounted in the nose section. Air intake beneath a bullet nose.
Fuselage. Oval, tapers to front and rear.
Tail. Tapered tail fin with fairing and square tip. Flats high-mounted and equally tapered with offset square tips.

USER COUNTRIES

Abu Dhabi, Angola, Austria, Bolivia, Burma, Chile, France, Guatamala, Iran, Iraq, Malaysia, Mexico, Netherlands, Switzerland.

SKYVAN 3M (SHORTS)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. An-14 Clod, An-28 Cash (neither shown in this manual).
Crew. One.
Role. STOL transport, cargo (twenty equipped troops, light vehicles), airdrop.
Armament. Usually none.
Dimensions. Length: 40 ft (12.22 m). Span: 65 ft (19.8 m).

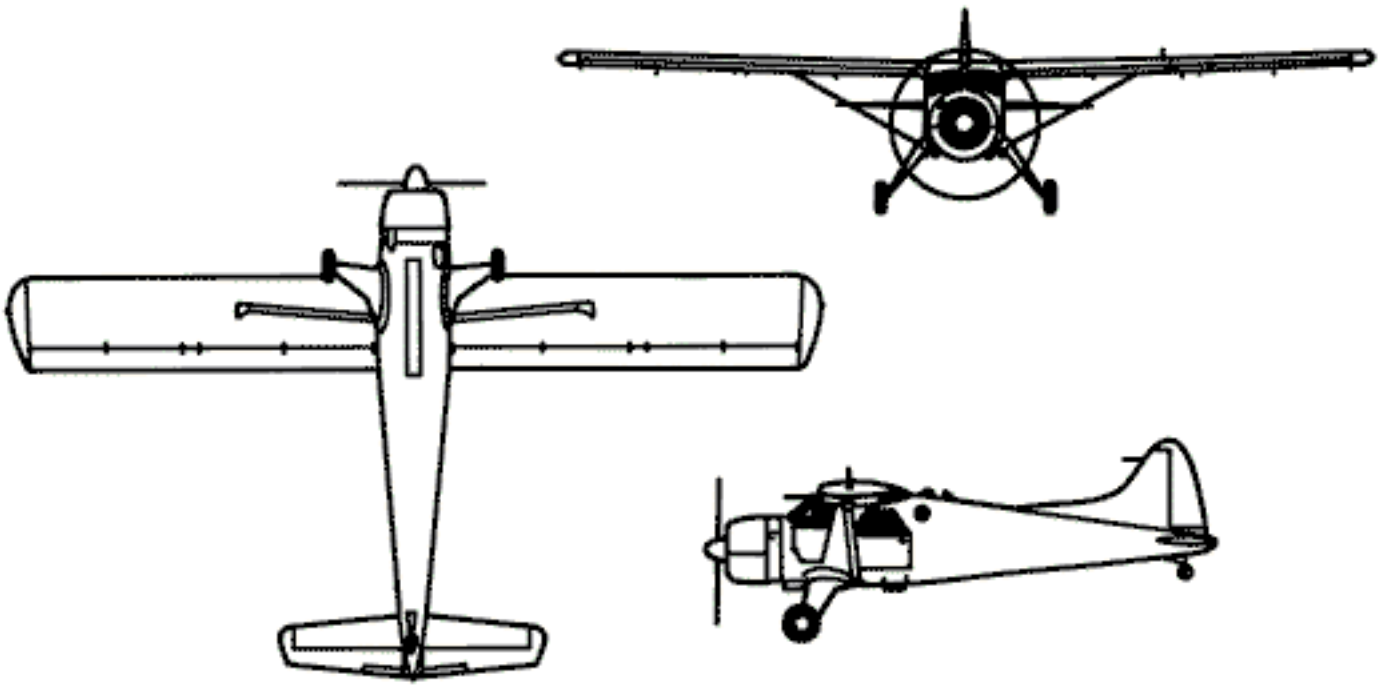
WEFT DESCRIPTION

Wings. High-mounted and rectangular-shaped with blunt tips.
Engine(s). Two piston or turboprop engines mounted under and extending beyond the wings' leading edges.
Fuselage. Thick, box-like, and flat-bottomed. Rounded nose with flush cockpit. Fixed landing gear. Upswept rear section.
Tail. Twin rectangular tail fins with blunt tips mounted on the tips of a rectangular flat. Fins extend above and below the flat.

USER COUNTRIES

Austria, Botswana, Ghana, Guyana, Indonesia, Japan, Malawi, Mauritania, Mexico, Nepal, North Yemen, Oman, Singapore, South Africa, UK, USA.

U-6A BEAVER (DE HAVILLAND CANADA)



GENERAL DATA

Country of Origin. Canada (DHC-2).
Similar Aircraft. An-2 Colt.
Crew. Two.
Role. Light-cargo, transport (five equipped troops).
Armament. Usually none.
Dimensions. Length: 30 ft, 4 in (9.24 m). Span: 48 ft (14.64 m).

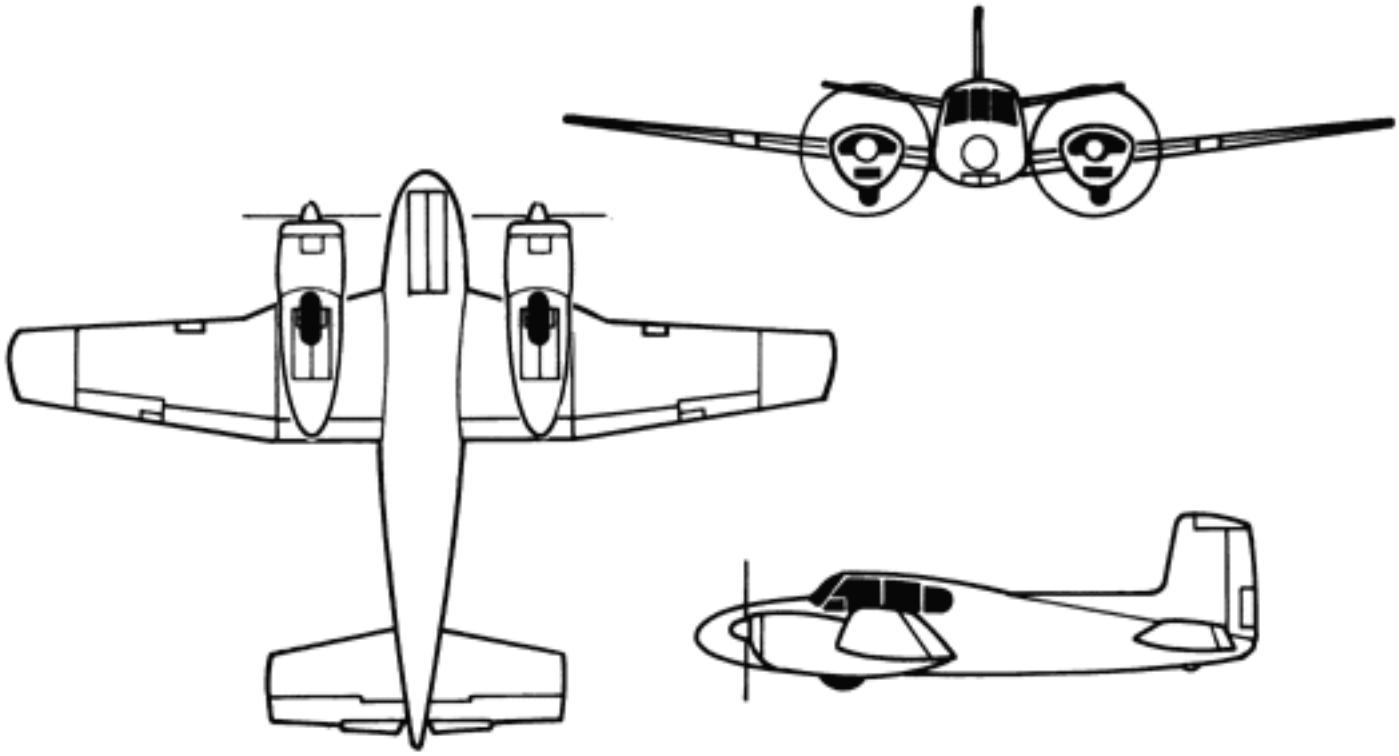
WEFT DESCRIPTION

Wings. High-mounted and rectangular with blunt tips.
Engine(s). One piston engine in nose section. Later models have a turboprop engine.
Fuselage. Club-shaped fuselage with blunt nose and sharply tapered tail section. Stepped cockpit.
Tail. Flats high-mounted on body and equally tapered with blunt tips. Fin is rounded.

USER COUNTRIES

Canada, Colombia, Haiti, USA.

U-8F SEMINOLE, QUEEN AIR (BEECHCRAFT)



GENERAL DATA

Country of Origin. USA
Similar Aircraft. C-12 Super King Air, King Air.
Crew. Two.
Role. Light-transport (eight equipped troops).
Armament. Usually none.
Dimensions. Length: 35 ft, 6 in (10.82 m). Span: 50 ft, 3 in (15.32 m).

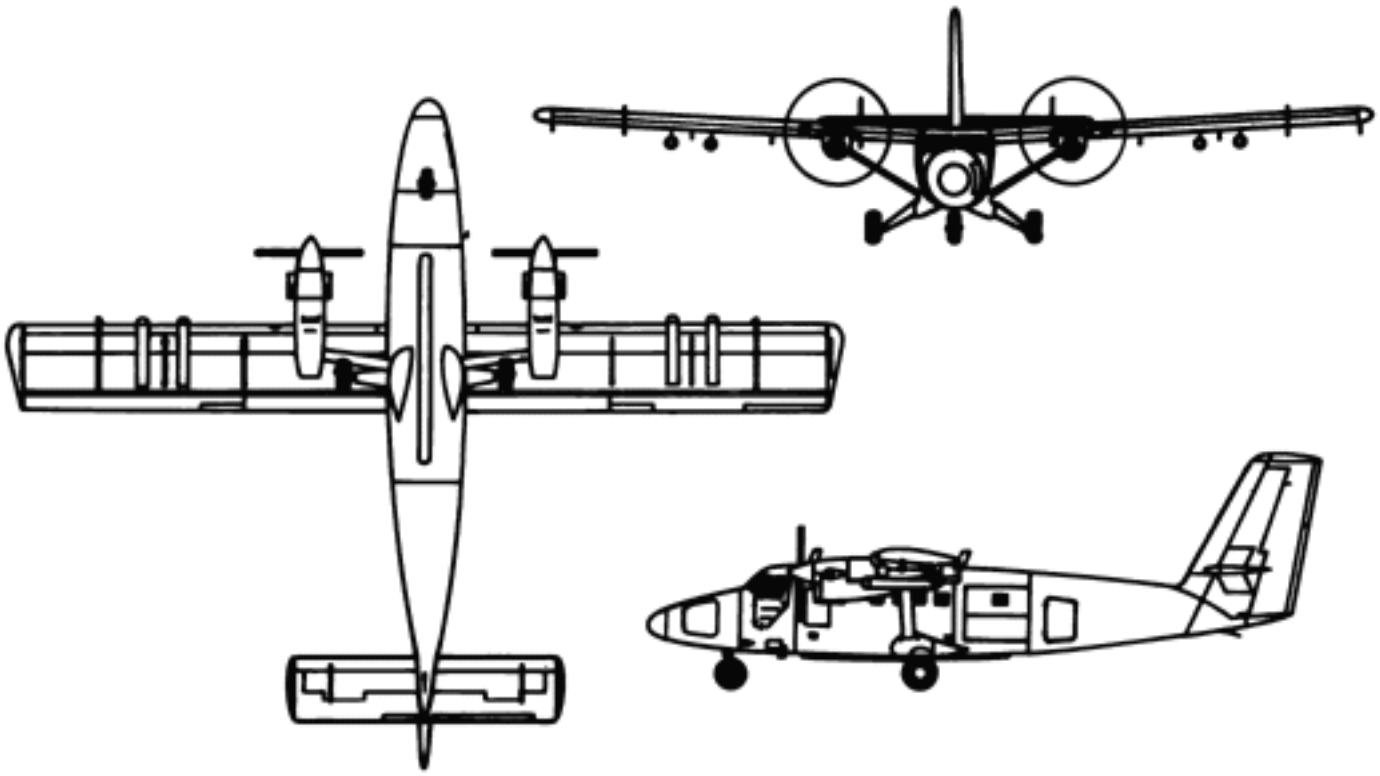
WEFT DESCRIPTION

Wings. Low-mounted and unequally tapered with blunt tips. Wide wing roots. Positive slant.
Engine(s). Two piston engines mounted in and extending beyond the wings' leading edges.
Fuselage. Short, thick, round, and tapered to rear section. Tapered nose. Stepped cockpit.
Tail. Tapered tail flats with blunt tips and high-mounted on body with positive slant. Swept-back tail fin with a square tip.

USER COUNTRIES

Argentina, Colombia, Dominican Republic, Israel, Japan, Mexico, Pakistan, Peru, Thailand, USA, Venezuela.

UV-18A TWIN OTTER (DE HAVILLAND CANADA)



GENERAL DATA

Country of Origin. Canada (DHC-6, CC-138).
Similar Aircraft. Skyservant.
Crew. Two.
Role. STOL transport, cargo (twenty equipped troops).
Armament. Usually none.
Dimensions. Length: 51 ft, 9 in (15.8 m). Span: 65 ft (19.8 m).

WEFT DESCRIPTION

Wings. High-mounted and untapered with blunt tips.
Engine(s). Two turboprops mounted in and extending beyond wings' leading edges.
Fuselage. Cigar-shaped and tapered to the rear section and nose section. Stepped cockpit.
Tail. Flats low-mounted on tail fin and untapered with blunt tips. Swept-back fin is tapered with a blunt tip.

USER COUNTRIES

Argentina, Canada, Chile, Colombia, Haiti, Kenya, Norway, Pakistan, Panama, Paraguay, People's Republic of China, Senegal, Sudan, Switzerland, USA.

CHAPTER 10

Helicopter Aircraft

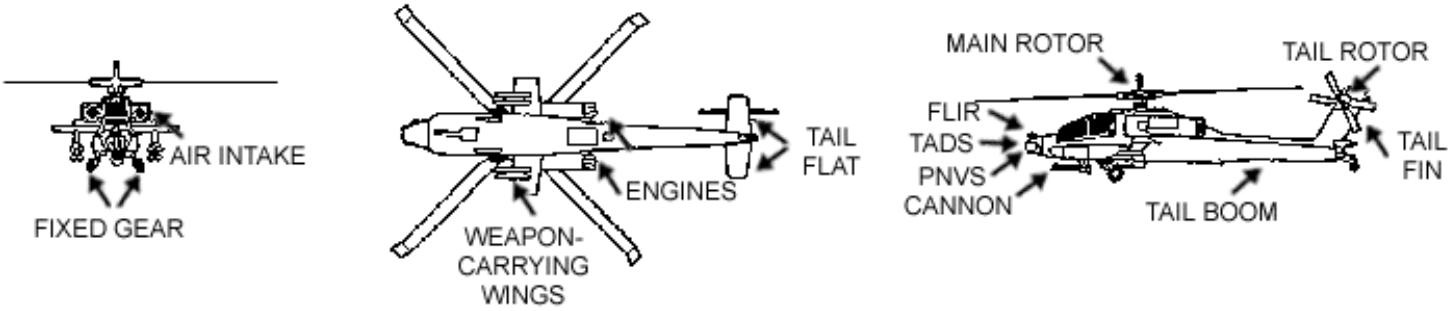
This chapter covers helicopter (rotary-wing) aircraft. There are a large number of helicopters covered since nearly all countries have them in their inventory.

Helicopters have been grouped together in this chapter because, with the exception of a few attack helicopters, most can be used in a variety of roles: attack, observation, heavy lift, cargo, transport, and surveillance.

There are many helicopter configurations. Only a few helicopters are similar in appearance and the differences make recognition of them easier for an observer.

For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. The following illustration shows helicopter aircraft WEFT description features. Line drawings are not to scale.

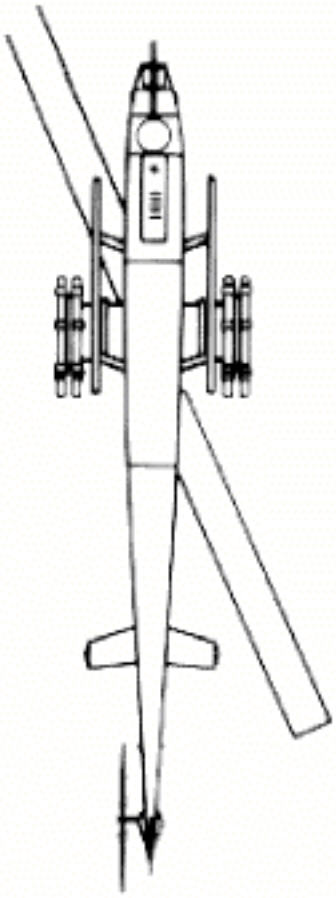
WEFT DESCRIPTION FEATURES

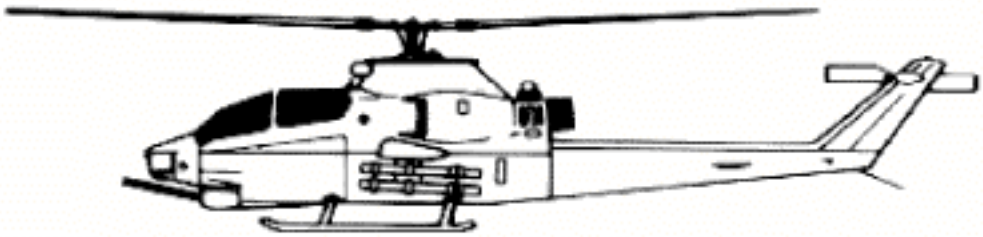


Chapter 10 Aircraft List

AH-1F Cobra	Gazelle	Mi-28 Havoc
AH-1W Super Cobra	Hirundo A109	OH-6A Cayuse
AH-64 Apache	Ka-50 Hokum	OH-13 Sioux
Alouette II	Lynx	OH-58D Kiowa
Alouette III	Mangusta A129	Puma
BO 105	Mi-1 Hare	Scout, Wasp
CH-3/HH-3E Jolly Green Giant	Mi-2 Hoplite	SH-3 Sea King
CH-46 Sea Knight	Mi-4 Hound	Super Frelon
CH-47 Chinook	Mi-6 Hook	UH-1 Iroquois
CH-53 Sea Stallion	Mi-8 Hip	UH-1N Model 212
Dauphin 2	Mi-24 Hind	UH-60A Black Hawk
Defender 500	Mi-26 Halo	.

AH-1F COBRA (BELL)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Mi-24 Hind, Mangusta A129, AH-64 Apache.
Crew. Two.
Role. Attack helicopter.
Armament. Cannon, grenade launcher, rockets, missiles, TOW missiles.
Dimensions. Length: 44 ft, 7 in (13.6 m). Rotor diameter: 44 ft (13.42 m).

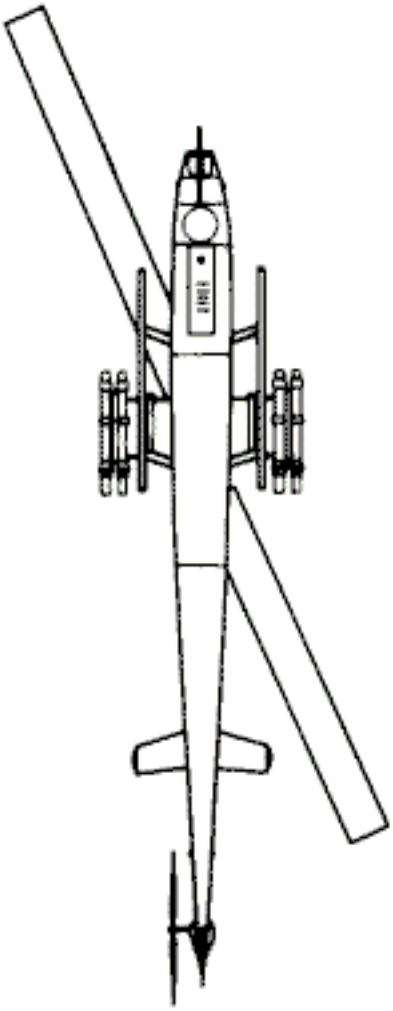
WEFT DESCRIPTION

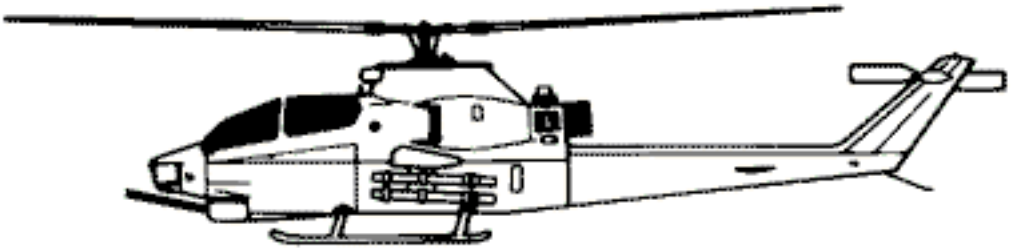
Wings. Large, dual-blade main rotor. Weapon-carrying wings are mid-mounted, short, and stubby.
Engine(s). One turboshaft mounted on top of the body forming a hump-like appearance. Single exhaust.
Fuselage. Thin, oval body with a short, pointed nose. Stepped, flat-plated canopy and tapered rear section. Low-mounted, tubular tail boom.
Tail. Small flats are mid-mounted, swept-back, tapered, blunt-tipped, and forward of the fin. Swept-back fin is tapered. Rotor on the right.

USER COUNTRIES

Bahrain, Iran, Israel, Japan, Jordan, South Korea, Pakistan, Taiwan, Thailand, Turkey, USA.

AH-1F SUPER COBRA (BELL)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Mi-24 Hind, Mangusta A129, AH-64 Apache.
Crew. Two.
Role. Attack helicopter.
Armament. Missiles, rockets, cannon, Hellfire and TOW missiles.
Dimensions. Length: 47 ft (14.32 m). Rotor diameter: 44 ft (13.42 m).

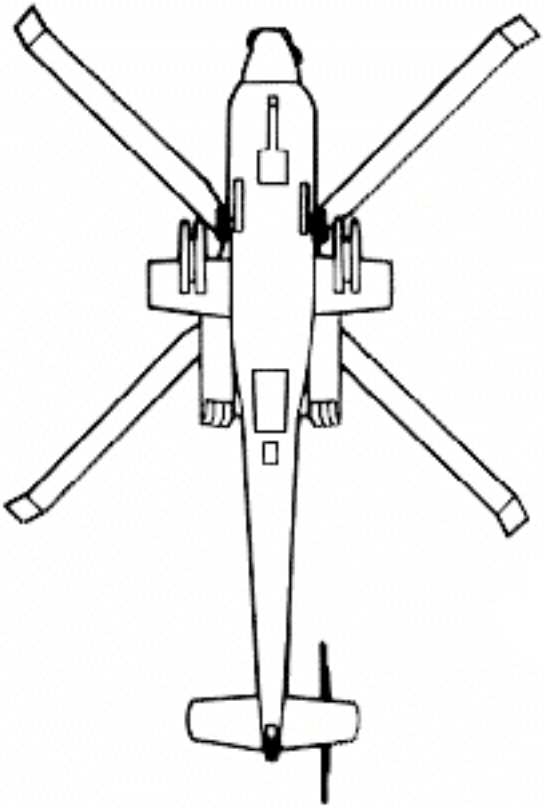
WEFT DESCRIPTION

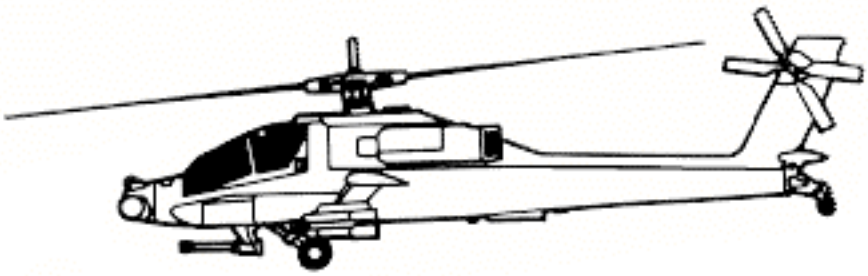
Wings. Large, dual-blade main rotor. Weapon-carrying wings are mid-mounted, short, and stubby.
Engine(s). Two turboshaft engines mounted on top rear of cabin. Two exhausts just above the tail boom.
Fuselage. Thin, oval body with short, pointed nose. Stepped, glassed-in canopy and tapered rear section. Low-mounted, tubular tail boom.
Tail. Small flat is mid-mounted, swept-back, tapered, and square-tipped. Fin is swept-back and tapered. Rotor is on the right.

USER COUNTRIES

Iran, South Korea, USA.

AH-64 APACHE (McDONNELL DOUGLAS)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Mi-28 Havoc, Mangusta A129, Mi-24 Hind, Ka-50 Hokum.
Crew. Two.
Role. Advanced attack helicopter.
Armament. 30-mm chain gun, missiles, rockets, Hellfire missiles.
Dimensions. Length: 48 ft, 2 in (14.69 m). Rotor diameter: 48 ft (14.64 m).

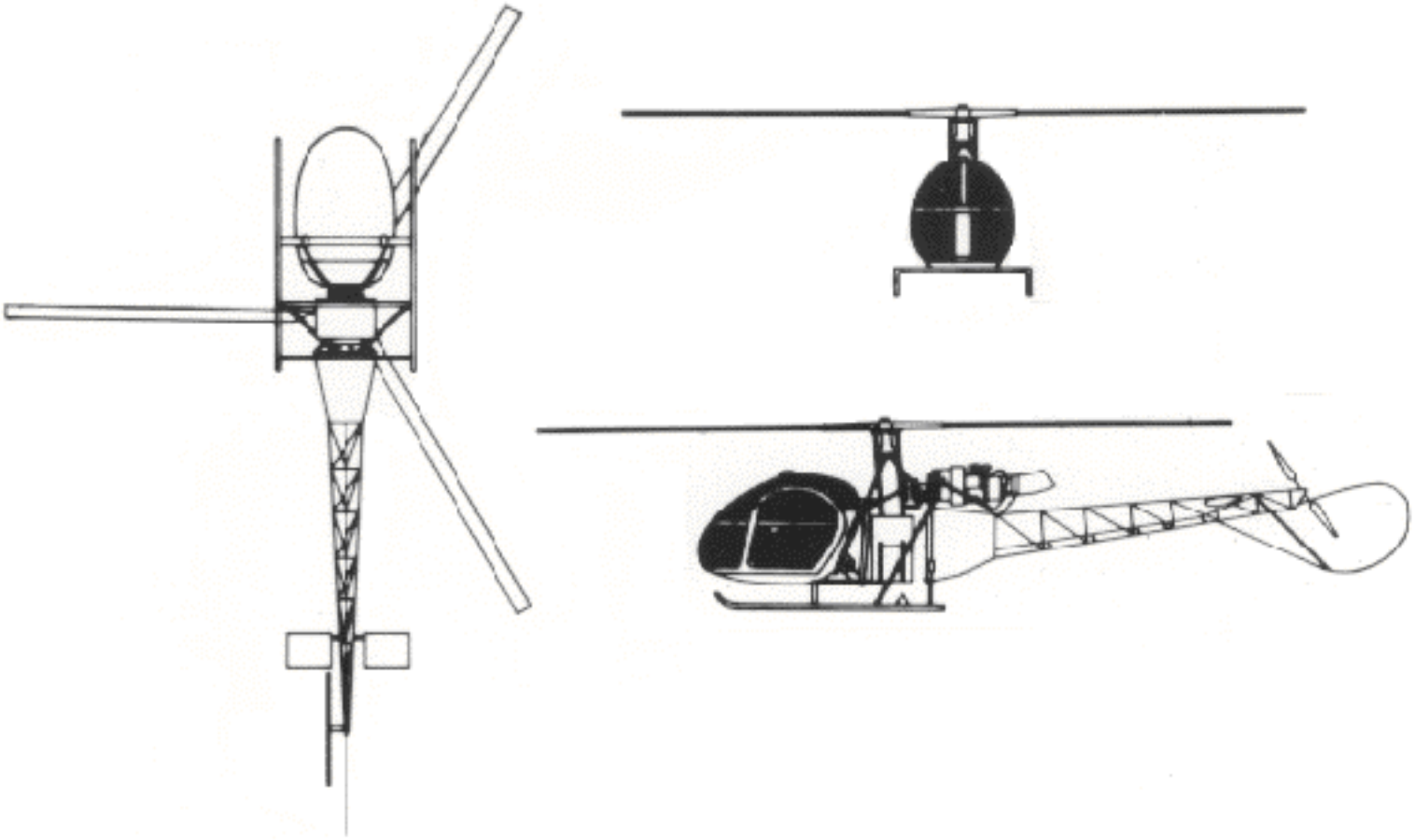
WEFT DESCRIPTION

Wings. Four-blade main rotor mounted above body midsection. Blade tips are swept-back. Short, stubby, weapon-carrying wings are mid-mounted with square tips.
Engine(s). Two turboshaft engines mounted high and outside the fuselage and to rear of the cockpit.
Fuselage. Blunt nose, flat-plated, and glassed-in cockpit. Fixed landing gear. Flat belly except for chain gun.
Tail. Large, equally tapered flats with square tips and low-mounted on fin. Swept-back fin with square tip. Rotor on the top left of fin.

USER COUNTRIES

Israel, Saudi Arabia, Egypt, Greece, Kuwait, South Korea, United Arab Emirates, UK, USA.

ALOUETTE II (AEROSPATIALE)



GENERAL DATA

Country of Origin. France.
Similar Aircraft. Alouette III, Gazelle, Scout/Wasp, OH-13 Sioux.
Crew. One.
Role. Observation, liaison, light-attack.
Armament. Machine gun, rockets, missiles.
Dimensions. Length: 33 ft, 8 in (10.28 m). Rotor diameter: 36 ft (11 m).

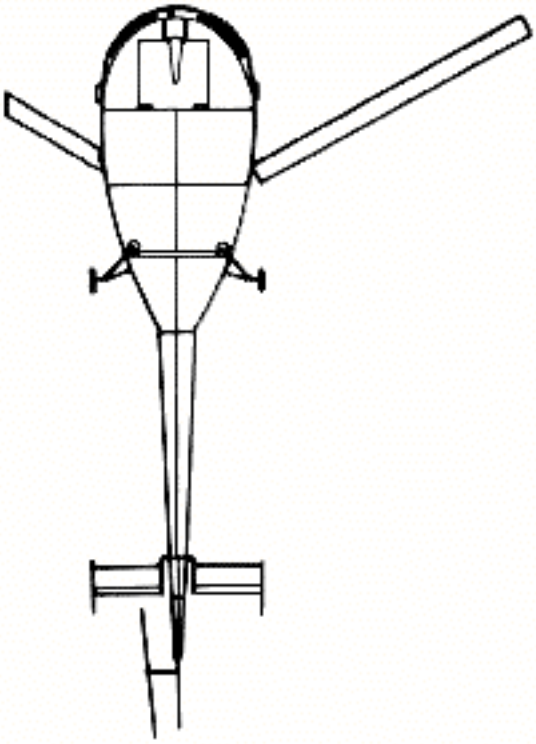
WEFT DESCRIPTION

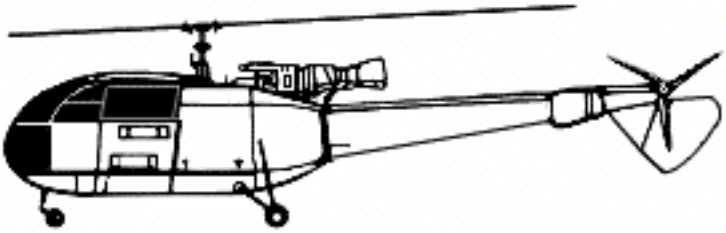
Wings. Three-blade main rotor high-mounted to the rear of the cockpit.
Engine(s). One turboshaft high-mounted on the fuselage to the rear of the cockpit and main rotor shaft. Upturned exhaust.
Fuselage. Oval, transparent, bubble cockpit. Tadpole-like appearance. Fixed-skid landing gear. Tail boom is open framework.
Tail. Small, rectangular, square-tipped flats forward of a small, right side-mounted rotor. No fin. Rotor guard.

USER COUNTRIES

Algeria, Belgium, Djibouti, Ecuador, France, Germany, India (Cheetah), Indonesia, Pakistan (Lama), Portugal, Togo, Tunisia, Turkey.

ALOUETTE III (AEROSPATIALE)





GENERAL DATA

Country of Origin. France.
Similar Aircraft. Alouette II, Gazelle, Scout/Wasp, OH-13 Sioux, BO 105.
Crew. One.
Role. Light-attack, transport (six equipped troops), general purpose.
Armament. Machine guns, cannon, antitank missiles, rockets.
Dimensions. Length: 32 ft, 10 in (10.02 m). Rotor diameter: 36 ft (11 m).

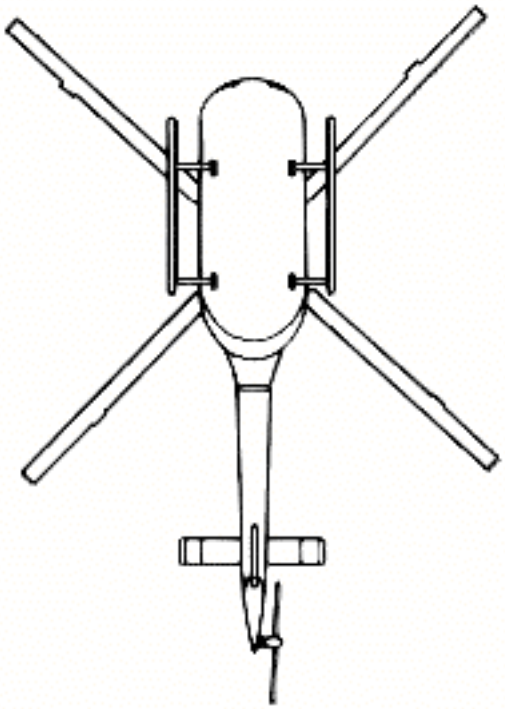
WEFT DESCRIPTION

Wings. Three-blade main rotor on top of fuselage to the rear of the cockpit.
Engine(s). One turboshaft above and to the rear of the cockpit and rotor shaft.
Fuselage. Oval-shaped, glassed-in cockpit. Fixed landing gear.
Tail. Rectangular flats with small, oval fins on tips. Rotor on right with prominent tail rotor guard.

USER COUNTRIES

Algeria, Angola, Argentina, Austria, Burkina-Faso, Burma, Burundi, Cameroon, Chile, Congo, Dominican Republic, Ecuador, El Salvador, France, Gabon, Ghana, Greece, Guinea-Bissau, India (Chetak), Iraq, Ireland, Ivory Coast, Libya, Malawi, Malaysia, Malta, Mexico, Nepal (Chetak), Netherlands, Nicaragua, North Yemen, Pakistan, Peru, Portugal, Romania, Rwanda, South Africa, Senegal, South Korea, Spain, Suriname, Switzerland, Togo, Tunisia, United Arab Emirates, Venezuela, Zaire.

BO 105 (MBB)



GENERAL DATA

Country of Origin. Germany.
Similar Aircraft. OH-6 Cayuse, Defender 500MD, Alouette III, Mi-4 Hound.
Crew. Two.
Role. Observation, antitank utility.
Armament. HOT antitank missiles.
Dimensions. Length: 39 ft (11.84 m). Rotor diameter: 32 ft, 3 in (9.84 m).

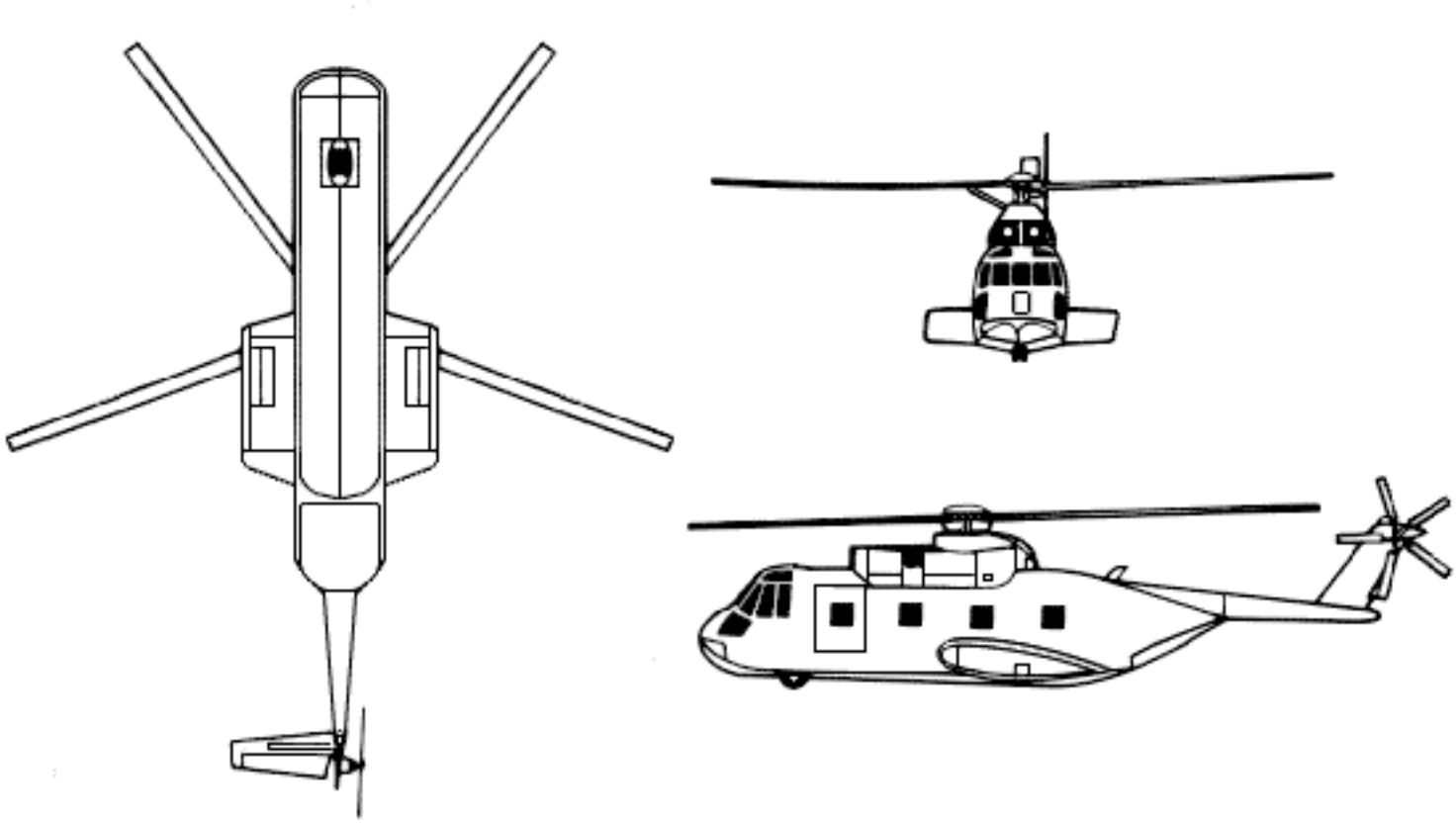
WEFT DESCRIPTION

Wings. Four-blade main rotor mounted above center of cabin. Antitank version has short, stubby, weapon-carrying outriggers on lower midsection.
Engine(s). Two turboshaft engines on top of fuselage.
Fuselage. Short, thick, oval-shaped, and rounded at nose and rear. Glassed-in cockpit. Landing skids.
Tail. Swept-back and tapered fin. Small rectangular fins mounted at the tips of the rectangular flats. Rotor on left.

USER COUNTRIES

Bahrain, Brunei, Chile, Colombia, Germany, Indonesia, Iraq, Mexico, Netherlands, Nigeria, Philippines, USA.

CH-3E/HH-3E JOLLY GREEN GIANT (SIKORSKY)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. CH-53 Sea Stallion, SH-3 Sea King, Super Frelon, Puma.
Crew. Two.
Role. Transport, cargo (30 equipped troops), assault, search and rescue missions.
Armament. Usually none.
Dimensions. Length: 57 ft, 3 in (17.46 m). Rotor diameter: 62 ft (19 m).

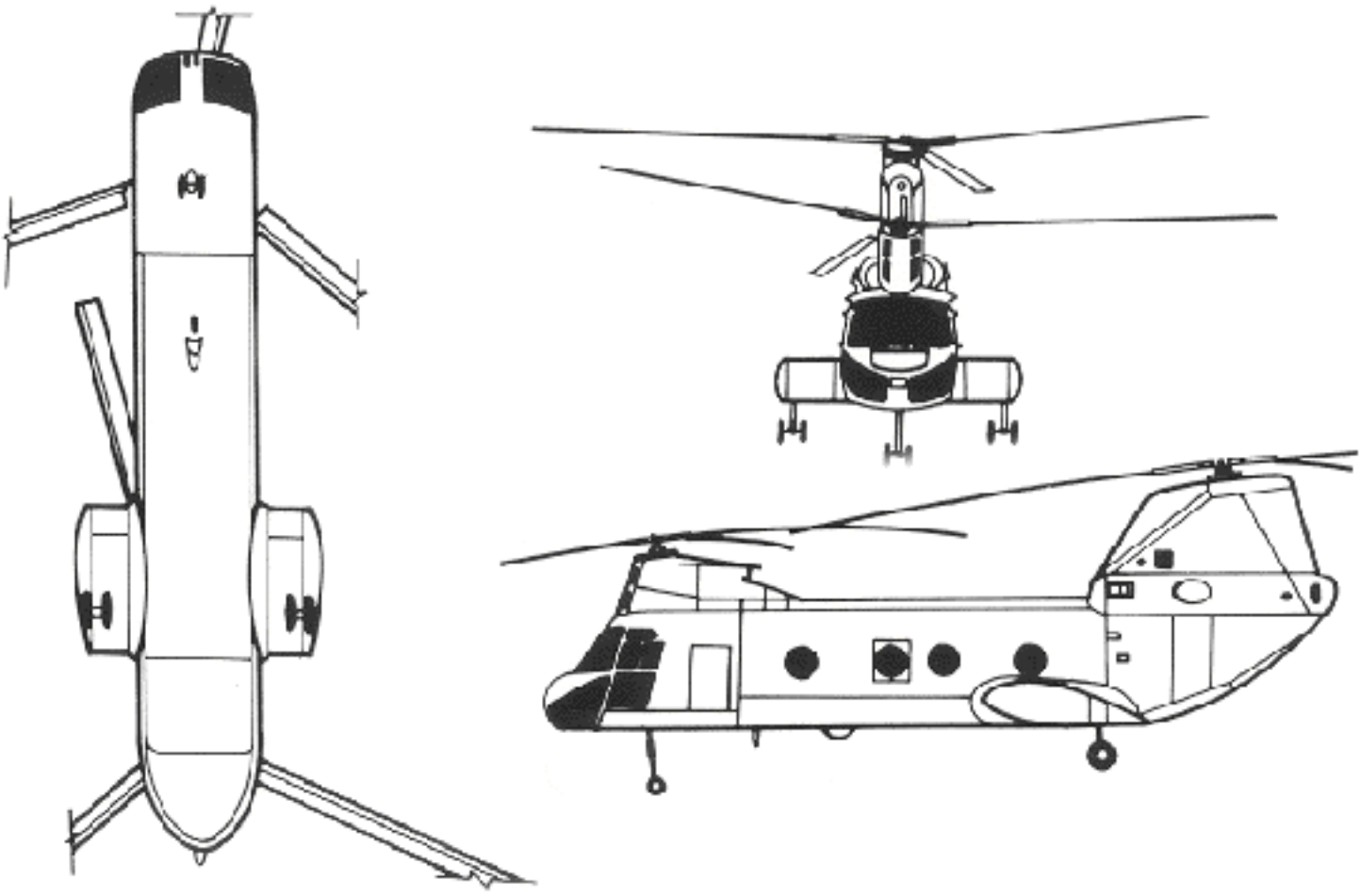
WEFT DESCRIPTION

Wings. Large, five-blade main rotor mounted above the body midsection.
Engine(s). Two turboshaft engines on top of the body midsection. Two round air intakes located above and behind cockpit.
Fuselage. Boat-shaped body with blunt, rounded nose, gradually tapering upward at the rear. A hump on top of the body and landing gear in pods on the sides. Stepped cockpit.
Tail. Single, tapered flat on right side of swept-back fin. Small rotor on left side of fin.

USER COUNTRIES

Italy, USA.

CH-46 SEA KNIGHT (BOEING VERTOL)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. CH-47 Chinook.
Crew. Three.
Role. Transport, cargo (25 equipped troops), assault.
Armament. Usually none.
Dimensions. Length: 45 ft (13.68 m). Rotor diameter: 51 ft (15.56 m).

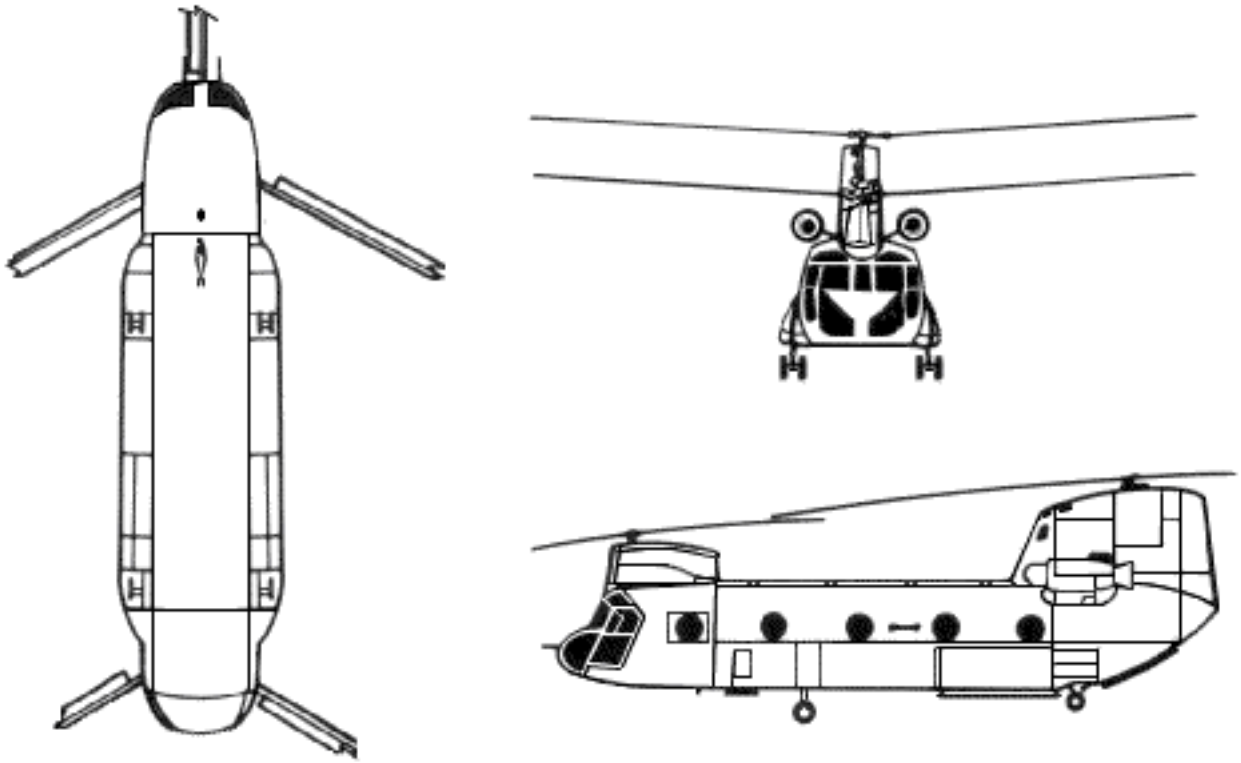
WEFT DESCRIPTION

Wings. Two three-blade main rotors, one above the nose section and cabin on a hump; the other on top of high, thick tail fin.
Engine(s). Two turboshafts located inside the lower part of the tail fin.
Fuselage. Short and thick with flat bottom and upswept tail section. Glassed-in cockpit. Landing gear pods on bottom rear of body.
Tail. High, thick tail fin with oval exhaust ports on the sides.

USER COUNTRIES

Japan (KV-107), USA.

CH-47 CHINOOK (BOEING VERTOL)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. CH-46 Sea Knight.
Crew. Two on flight deck.
Role. Transport, cargo (44 equipped troops), recovery.
Armament. Usually none.
Dimensions. Length: 51 ft (15.56 m). Rotor diameter: 60 ft (18.3 m).

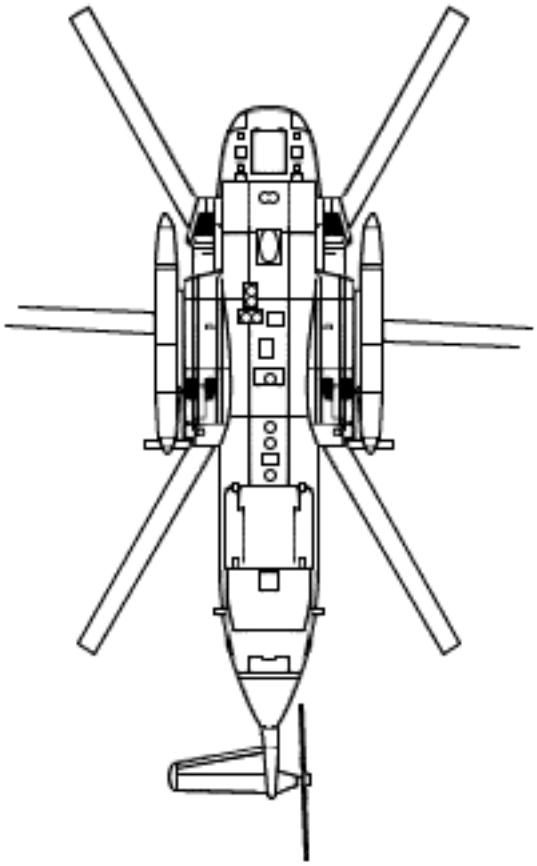
WEFT DESCRIPTION

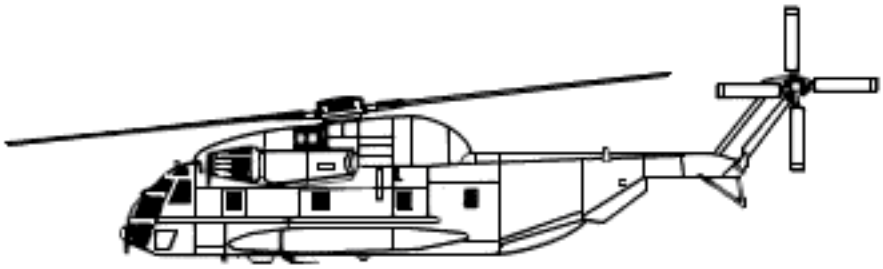
Wings. Two three-blade main rotors, one above the nose and one above the tail section.
Engine(s). Two turboshafts in pods, one on each side of thick tail fin.
Fuselage. Thick, box-like body with bulges along the sides of the midsection. Tapered front and rear. Glassed-in, stepped cockpit above a short, rounded nose. Fixed landing gear.
Tail. High, thick tail fin.

USER COUNTRIES

Argentina, Australia, Canada, Egypt, Greece, Iran, Italy, Japan, Libya, Morocco, UK, USA.

CH-53 SEA STALLION (SIKORSKY)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. HH-3E Jolly Green Giant, SH-3 Sea King, Super Frelon, Mi-26 Halo.
Crew. Two on flight deck.
Role. Heavy-assault transport (55 equipped troops, vehicles, guns), rescue.
Armament. Usually none.
Dimensions. Length: 67 ft (20.46 m). Rotor diameter: 72 ft, 3 in (22.04 m).

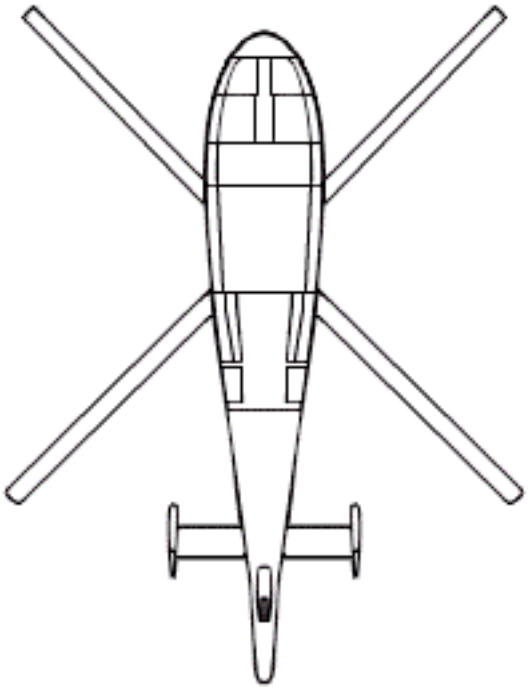
WEFT DESCRIPTION

Wings. Large, six-blade main rotor mounted on a long hump above the body midsection.
Engine(s). Two turboshafts mounted high and outside the body midsection.
Fuselage. Large, boat-shaped with rounded nose. Body tapers to rear. Glassed-in cockpit. Upswept rear section. Landing gear pods at lower midsection.
Tail. One tapered flat on right side of swept-back fin. Rotor on left side of fin.

USER COUNTRIES

Germany, Iran, Israel, USA.

DAUPHIN 2 (AEROSPATIALE)



GENERAL DATA

Country of Origin. France.
Similar Aircraft. Lynx, Gazelle, Hirundo A109.
Crew. Normally two. Three with crew chief.
Role. Assault-transport (8 to 10 troops), utility, attack.
Armament. Rockets, antitank missiles on SA 365M model.
Dimensions. Length: 37 ft, 6 in (11.43 m). Rotor diameter: 39 ft, 2 in (11.94 m).

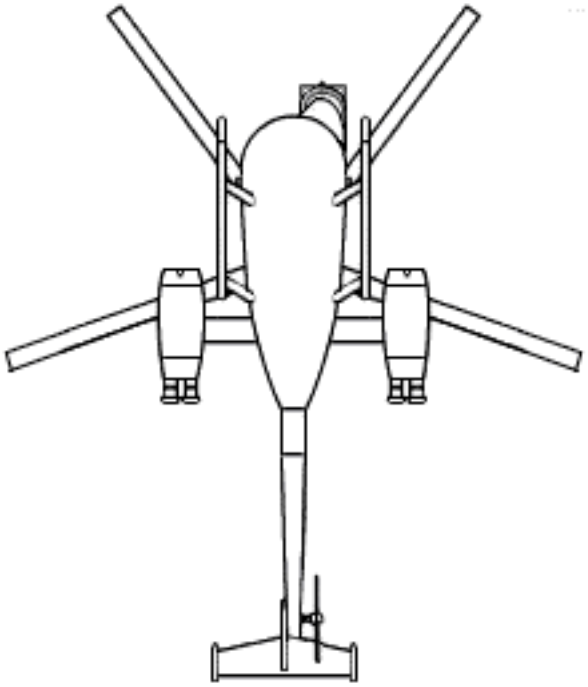
WEFT DESCRIPTION

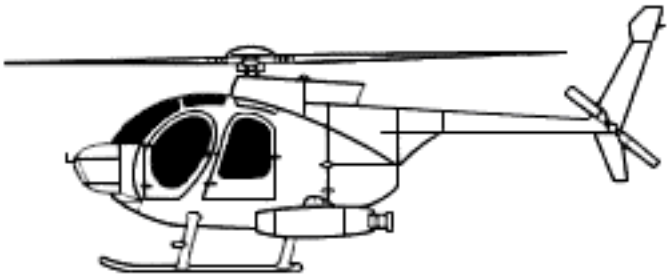
Wings. Four-blade main rotor. Weapons carrying platform on some models.
Engine(s). Two turboshafts mounted side by side on top of cabin. Air intake on side of motor hump. Exhausts at the rear of the hump.
Fuselage. Teardrop-shaped body. Tapered boom to the tail fin. Rounded nose and stepped-up cockpit. Retractable gear and flat bottom.
Tail. Flats with swept-back tips forward of the swept-back and tapered fin with blunt tip. Rotor is inside housing at the bottom of the fin.

USER COUNTRIES

France, People’s Republic of China (Z-9), USA.

DEFENDER 500 (McDONNELL DOUGLAS)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. OH-6 Cayuse, BO 105, Alouette II.
Crew. One.
Role. ASW, scout, antitank, multimission.
Armament. Chain gun, missiles, TOW-capable.
Dimensions. Length: 23 ft (7.02 m). Rotor diameter: 26 ft, 4 in (8.04 m).

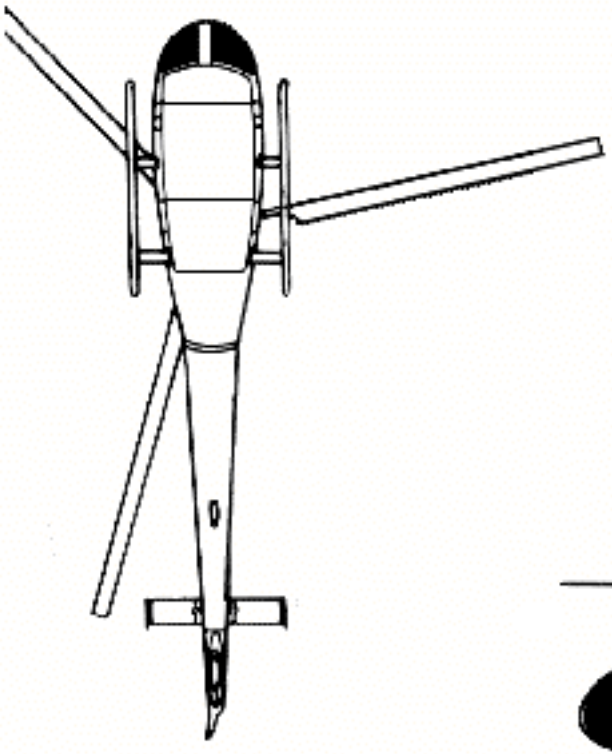
WEFT DESCRIPTION

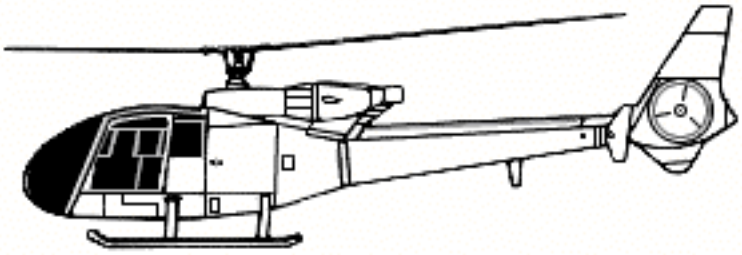
Wings. Either four- or five-blade main rotor (depending on model). Weapons platform on lower rear body.
Engine(s). One mounted inside body. Air intakes on top of cabin. Blackhole exhaust.
Fuselage. Teardrop-shaped. Round, glassed-in cockpit. Landing skids.
Tail. Fin boomerang-shaped, swept-back, and tapered. Flats back-tapered with small fins attached to the tips. Flats high-mounted on the fin forming a T. Rotor on lower left of tail boom.

USER COUNTRIES

Argentina, Bahrain, Bolivia, Colombia, Costa Rica, Denmark, Dominican Republic, El Salvador, Honduras, Indonesia, Iraq, Israel, Jordan, Kenya, North Korea, South Korea, Spain, Taiwan, USA.

GAZELLE (AEROSPATIALE, WESTLAND)





GENERAL DATA

Countries of Origin. France, UK.
Similar Aircraft. Alouette II, Alouette III, Scout/Wasp, OH-13 Sioux, Dauphin 2.
Crew. One.
Role. General utility, attack.
Armament. Machine guns, rockets, missiles.
Dimensions. Length: 39 ft, 3 in (11.98 m). Rotor diameter: 34 ft, 5 in (10.6 m).

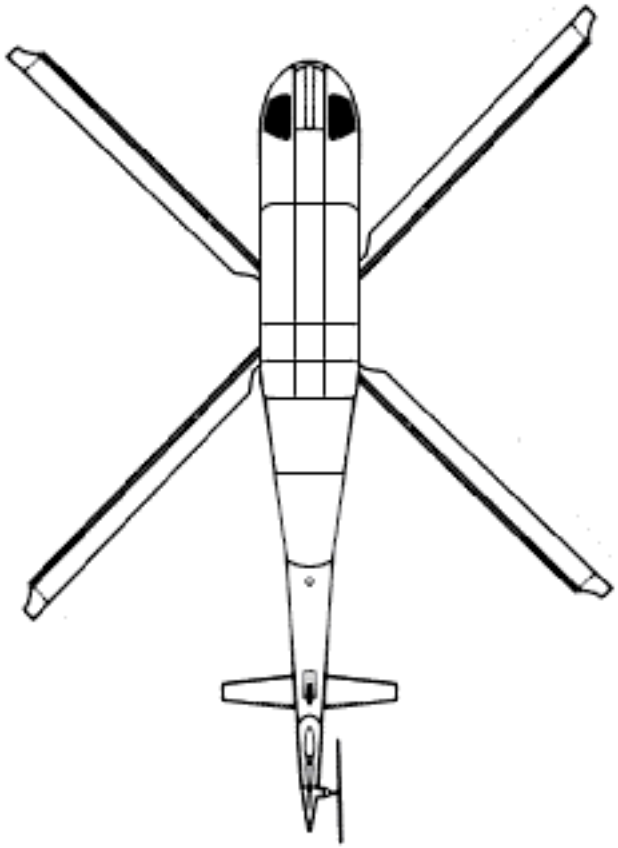
WEFT DESCRIPTION

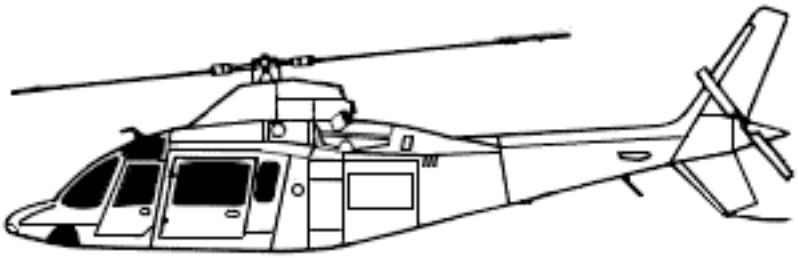
Wings. Three-blade main rotor mounted on top of the fuselage at the rear of the cabin.
Engine(s). One turboshaft engine mounted on top of the fuselage and to the rear of the rotor shaft. Prominent, upturned exhaust.
Fuselage. Teardrop-shaped with round, glassed-in cockpit. Tapering tail boom mid-mounted on fuselage. Landing skids.
Tail. Tail fin swept-back and tapered with a square tip. Rectangular flats with small fins. Fan rotor housing is built into the lower tail.

USER COUNTRIES

Angola, Burundi, Cameroon, Chad, Cyprus, Ecuador, Egypt, France, Gabon, Iraq, Kenya, Kuwait, Lebanon, Morocco, People’s Republic of China, Qatar, Rwanda, Senegal, Syria, UK, Yugoslavia.

HIRUNDO A109 (AGUSTA)





GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. OH-58 Kiowa, UH-1 Iroquois, UH-1N Model 212, Lynx.
Crew. One, two.
Role. Utility, ECM, ambulance, scout, attack, air defense, antitank.
Armament. Machine guns, rockets, pods, HOT or TOW missiles.
Dimensions. Length: 42 ft, 10 in (13.06 m). Rotor diameter: 36 ft (11.02 m).

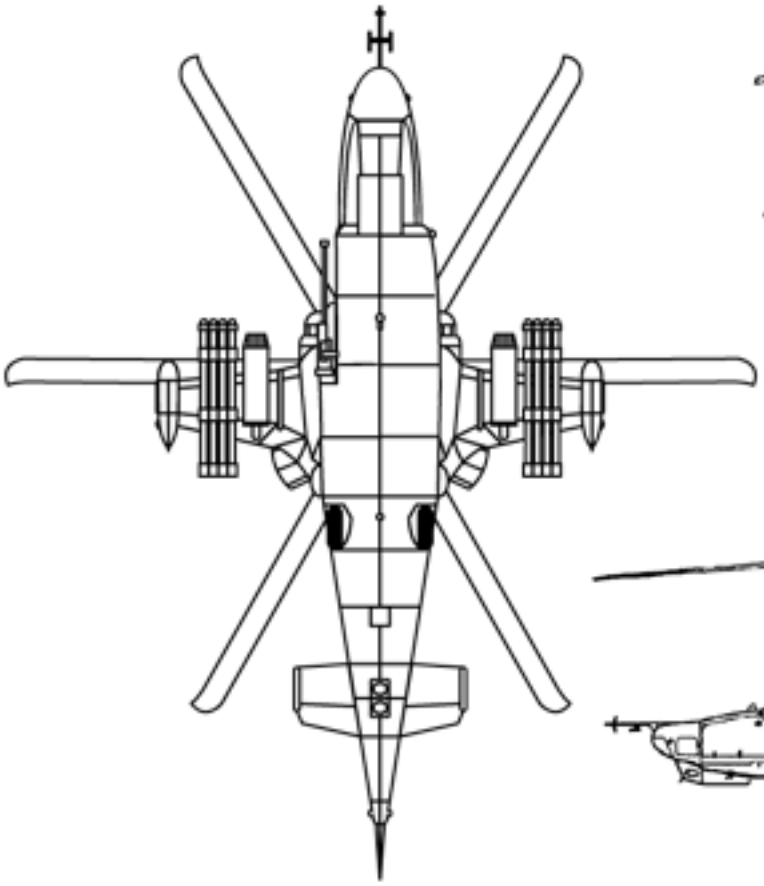
WEFT DESCRIPTION

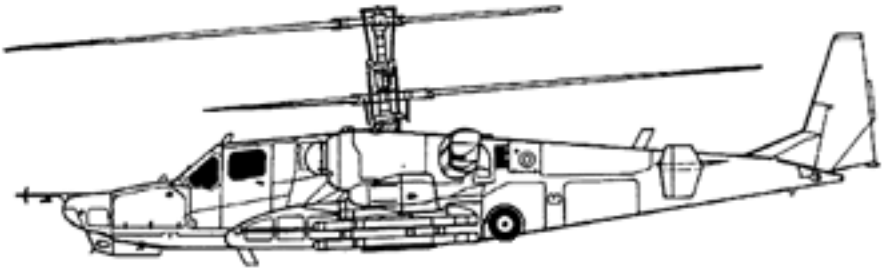
Wings. Four-blade main rotor mounted on hump above the body midsection. Weapon-carrying platforms at bottom midsection.
Engine(s). Two turboshafts on top of fuselage. Exhaust ports protrude upward and to the rear.
Fuselage. Rectangular with flat belly. Retractable landing gear. Tapered, rounded nose section. Stepped cockpit. Upswept, tapered rear section.
Tail. Swept-back and tapered tail fin with angular tip. Swept-back and tapered belly fin with angular tip. Small rotor on left side attached to the tapered tail boom.

USER COUNTRIES

Argentina, Greece, Italy, Mexico, UK, Venezuela.

Ka-50 HOKUM (KAMOV)





GENERAL DATA

Country of Origin. CIS (Formerly USSR).
Similar Aircraft. Hirundo A109, Mangusta A129, AH-64 Apache, AH-1F Cobra.
Crew. Two.
Role. Antihelicopter and gunship.
Armament. Rocket packs, gun, AAMs.
Dimensions. Length: 44 ft, 3 in (13.5 m). Roter diameter: 45 ft, 10 in (14 m).

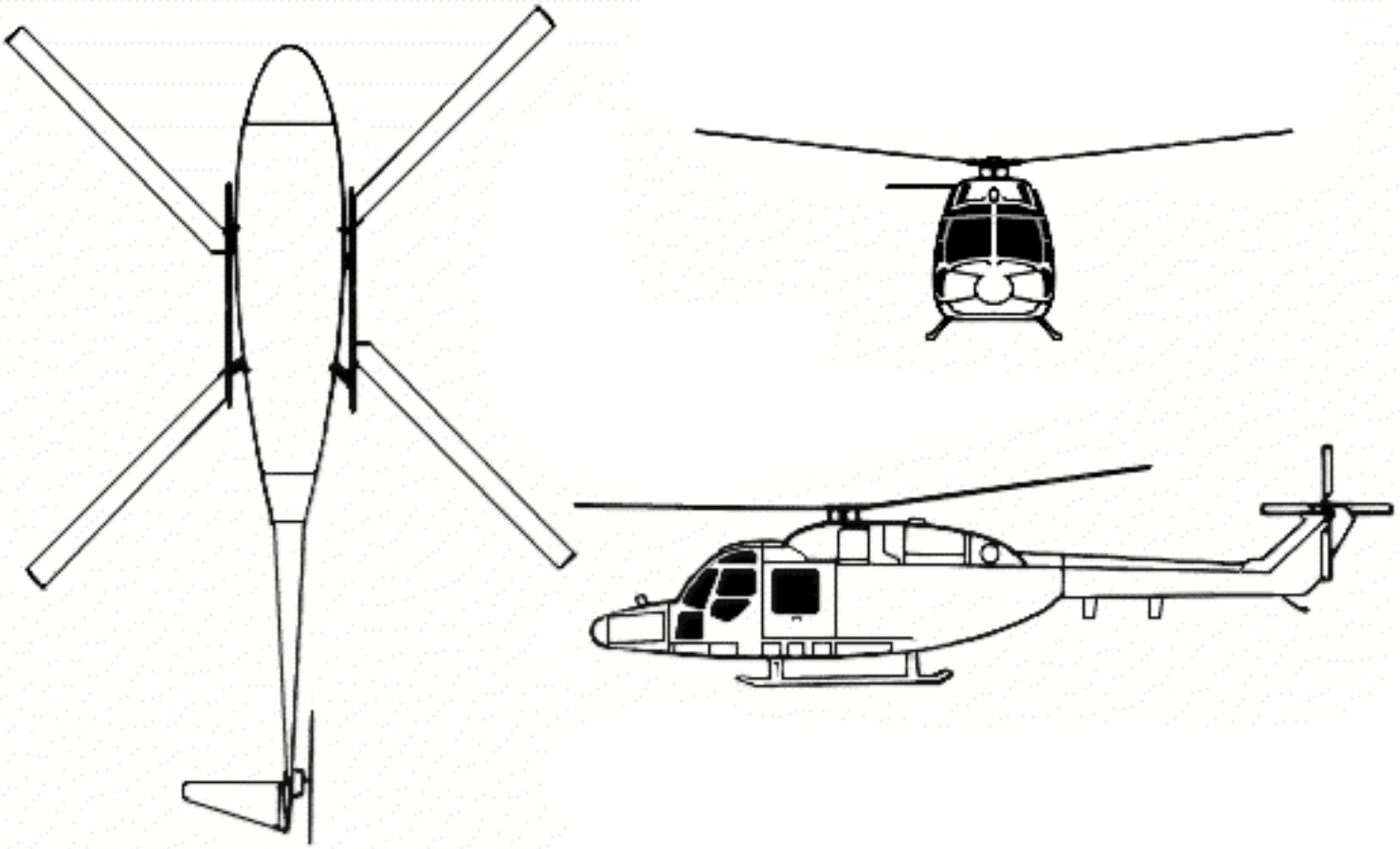
WEFT DESCRIPTION

Wings. Coaxial, contrarotating, three-blade main rotors, widely separated with swept-back tips. Equally tapered, short, stubby, weapon-carrying wings with end plates.
Engine(s). Twin turboshafts mounted high on the fuselage above the stubby wings. Semicircular air intakes. Exhausts are turned outward.
Fuselage. Streamlined body tapers to the front and rear. Flat-bottomed except for underbelly gun pod and sensor. Flat plated glassed-in canopy.
Tail. Thick, tapering tail boom. Back-tapered tail fin with a square tip. Flats are high-mounted on the tail boom with end plates. Flats are located forward of the fin. No tail rotor.

USER COUNTRY

CIS.

LYNX (WESTLAND)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. OH-58 Kiowa, Hirundo A109, UH-1 Iroquois, UH-1N Model 212, Dauphin 2.
Crew. Two.
Role. Utility, attack, antitank.
Armament. Cannon, minigun, rockets, missiles, HOT or TOW antitank missiles.
Dimensions. Length: 39 ft, 6 in (12.06 m). Rotor diameter: 42 ft (12.8 m).

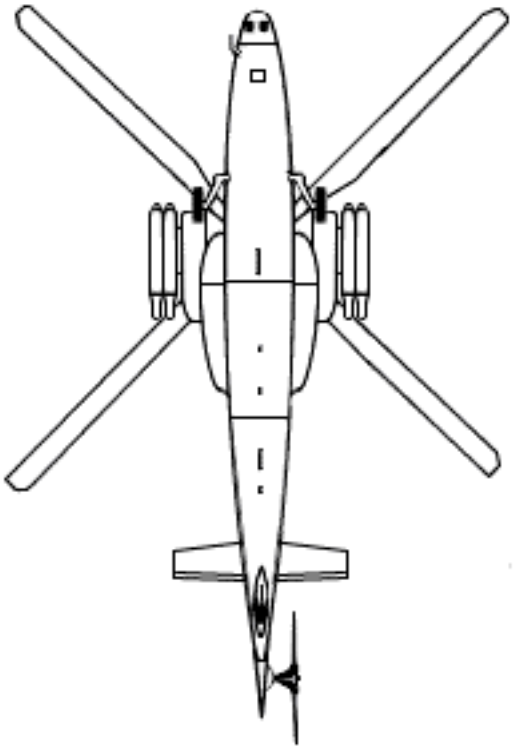
WEFT DESCRIPTION

Wings. Four-blade main rotor on a hump on top of the cabin.
Engine(s). Two turboshaft engines on top of rear of cabin.
Fuselage. Oval, stepped-up and glassed-in cockpit. Box-like cargo compartment. High-mounted, tapered tail boom. Landing skids on army versions. Naval versions have wheels.
Tail. Swept-back fin is tapered. Single flat on right side near top of tail fin. Tail rotor on left side.

USER COUNTRIES

Brazil, Denmark, France, Germany, Netherlands, Nigeria, Norway, UK.

MANGUSTA A129 (AGUSTA)



GENERAL DATA

Country of Origin. Italy.
Similar Aircraft. AH-64 Apache, Mi-28 Havoc, Ka-50 Hokum.
Crew. Two.
Role. Light-attack, antiarmor, scout.
Armament. Gun pods; rockets; missiles; TOW-, Hellfire-, or HOT-capable.
Dimensions. Length: 46 ft, 10 in (14.3 m). Rotor diameter: 39 ft (12 m).

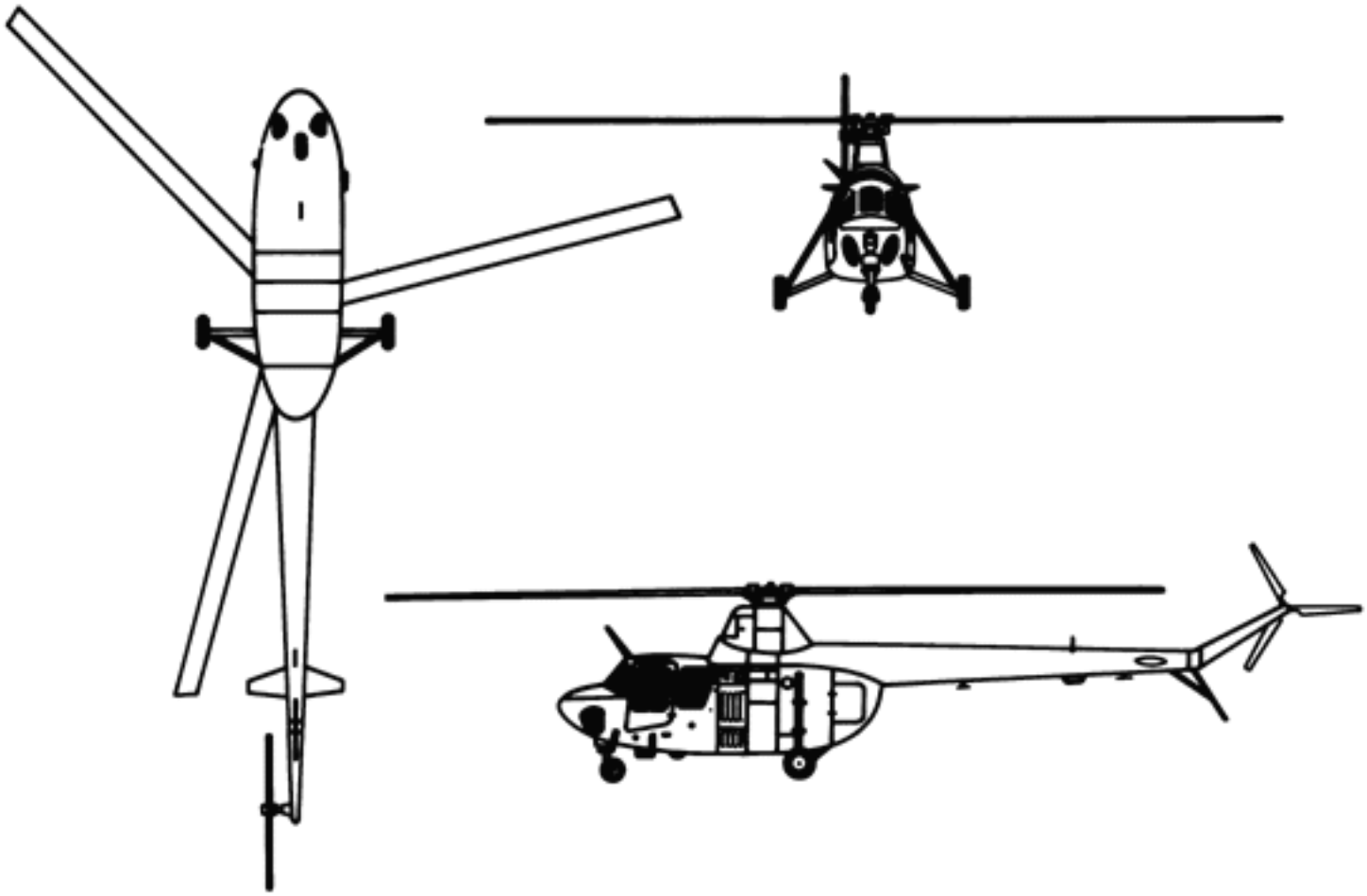
WEFT DESCRIPTION

Wings. Four-blade main rotor on top center of cabin. Weapon-carrying wings are short, stubby, and mid-mounted on the fuselage.
Engine(s). Two turboshaft engines mounted alongside the top of the fuselage. Semicircular air intakes.
Fuselage. Slender and tapered to the rear. Tandem cockpit, glassed-in and flat-plated. Tapered from cockpit to blunted nose. Fixed landing gear.
Tail. Boom tapers to the rear. High, swept-back fin with square tip. Flats unequally tapered with square tip. Belly fin with the rear landing wheel attached. Tail rotor on left side.

USER COUNTRY

Italy.

Mi-1 HARE (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. None.
Crew. One.
Role. Utility, liaison.
Armament. Usually none.
Dimensions. Length: 39 ft, 8 in (12.2 m). Rotor diameter: 47 ft (14.36 m).

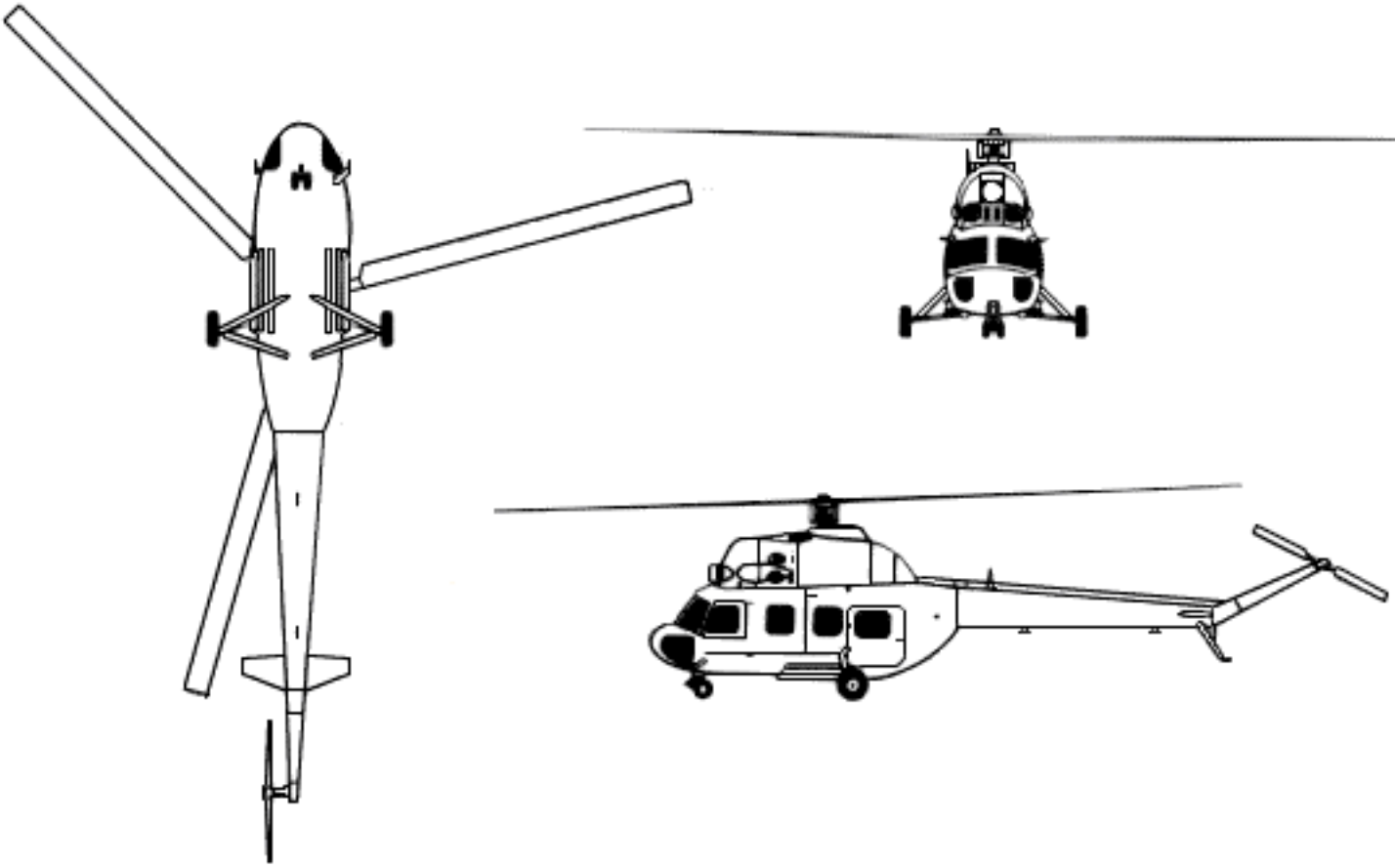
WEFT DESCRIPTION

Wings. Three-blade main rotor mounted on a high hump on top of fuselage midsection.
Engine(s). One radial (piston) engine mounted beneath a hump on top of cabin.
Fuselage. Tadpole-shaped when viewed from bottom. Rounded nose and rear sections. Stepped, glassed-in cockpit and a long, thin, tapered tail boom.
Tail. Swept-back fin with rotor on the right top. Small flats are equally tapered and mounted directly in front of the fin.

USER COUNTRY

CIS.

Mi-2 HOPLITE (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Hirundo A109, Mi-8 Hip.
Crew. One.
Role. Transport, cargo, reconnaissance, trainer, search and rescue, liaison, armed support.
Armament. Rockets, missiles, machine guns.
Dimensions. Length: 57 ft (17.4 m). Rotor diameter: 47 ft, 6 in (14.6 m).

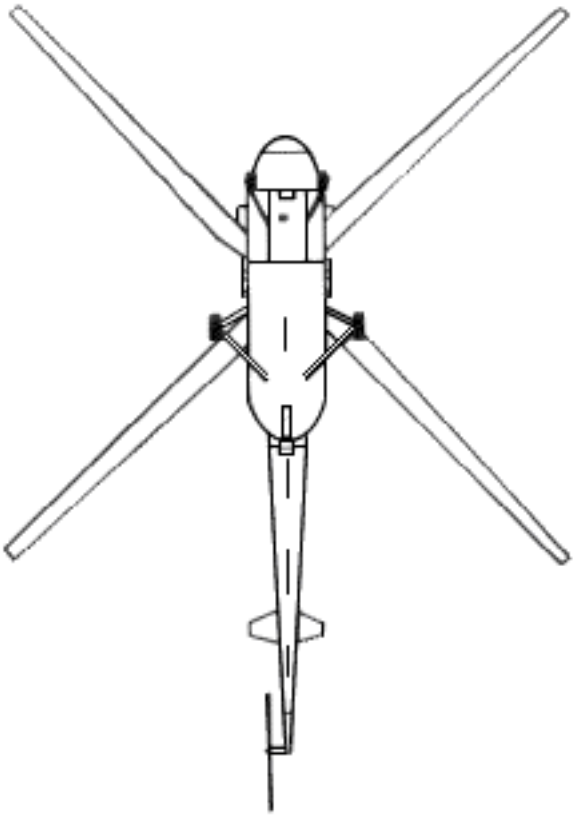
WEFT DESCRIPTION

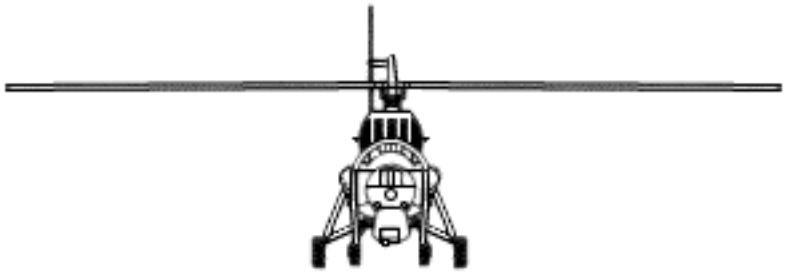
Wings. Three-blade main rotor on top of large hump above the body midsection.
Engine(s). Two turboshafts mounted side-by-side on top of cabin, forming a hump. Round air intakes above cockpit. Oval exhausts on sides of engines.
Fuselage. Small, bus-like. Stepped-up cockpit and rounded nose. Tadpole-shaped body when viewed from bottom. Fixed landing gear.
Tail. Tapered tail boom. Small, unequally tapered flats. Thin, swept-back fin. Rotor is on the right.

USER COUNTRIES

Azerbaijan, Burma, Bulgaria, CIS, Cuba, Czech Republic, Georgia, Germany, Ghana, Hungary, Libya, Nicaragua, Poland, Slovakia, Syria, Ukraine.

Mi-4 HOUND (MIL)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. BO 105, Defender 500.
Crew. Three.
Role. Transport (12 to 16 equipped troops), armed support, trainer.
Armament. Machine gun pod, rockets.
Dimensions. Length: 55 ft (16.8 m). Rotor diameter: 69 ft (21 m).

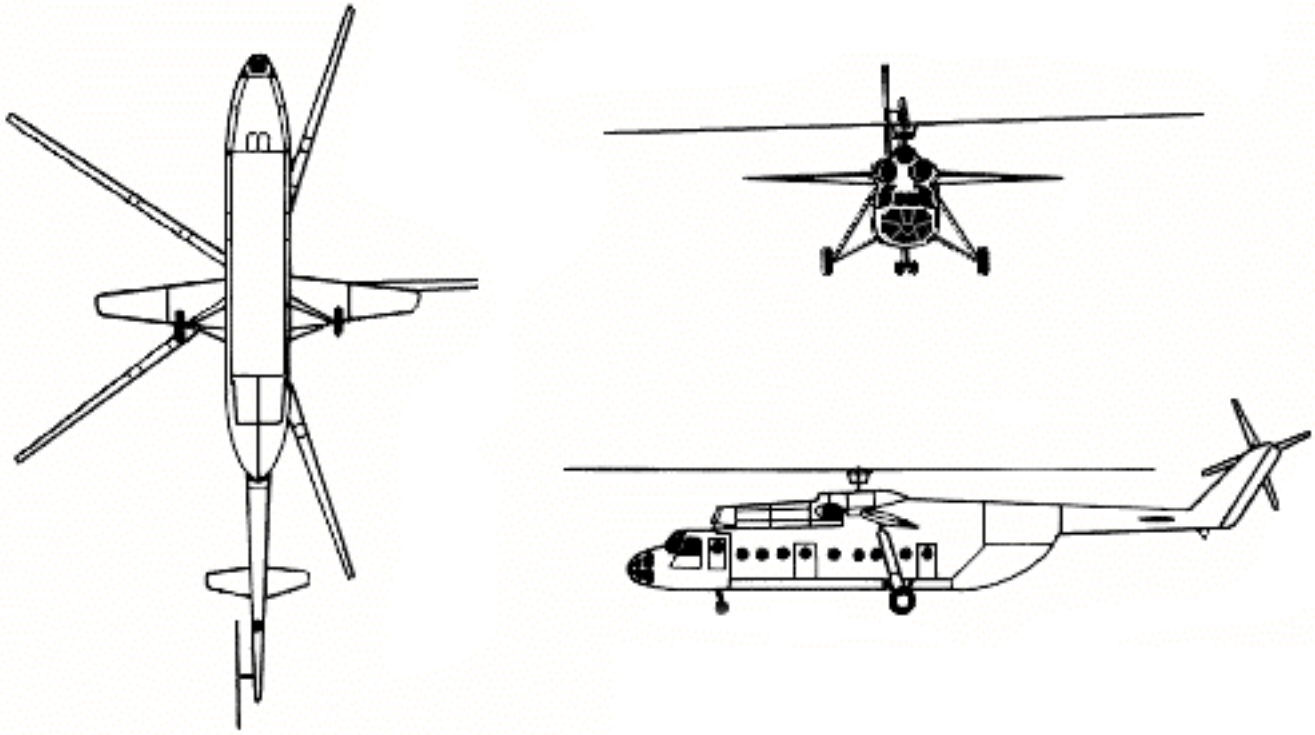
WEFT DESCRIPTION

Wings. Large, four-blade main rotor mounted on top of fuselage midsection.
Engine(s). One piston engine mounted within the nose section.
Fuselage. Short, oval with solid, rounded nose and stepped-up cockpit. High-mounted, long, thin tail boom. Gun mount under belly (oil pan). Four-wheeled landing gear.
Tail. Small, three-blade rotor attached to right side of thin fin. Small flats forward of the fin.

USER COUNTRIES

Afghanistan, Albania (Z-5), Algeria, Bulgaria, Cuba, Czech Republic, Egypt, Germany, Iraq, Mali, Mongolia, North Korea, North Yemen, People’s Republic of China (Z-5), Poland, Romania, Somalia , South Yemen, Sudan, Syria, Vietnam.

Mi-6 HOOK (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Mi-26 Halo, CH-3 Jolly Green Giant.
Crew. Five.
Role. Heavy transport (65 equipped troops), vehicles.
Armament. Machine gun.
Dimensions. Length: 109 ft (33.3 m). Rotor diameter: 115 ft (35 m).

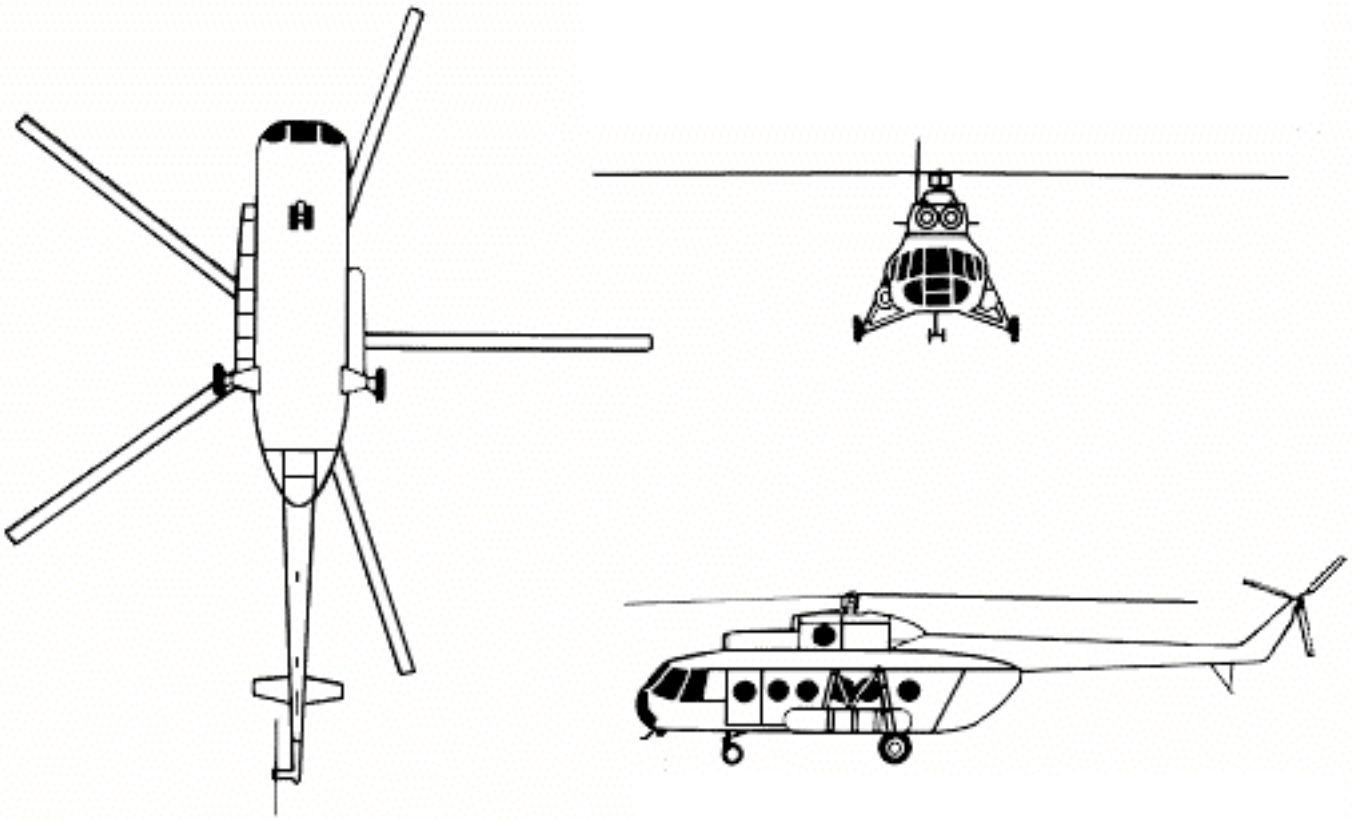
WEFT DESCRIPTION

Wings. Large, five-blade main rotor centered over fuselage midsection. Stabilizing wings unequally tapered with blunt tips, mounted high on the fuselage, and tilted upward to the front.
Engine(s). Two turboshafts on top of fuselage midsection. Round air intakes above cockpit. Oval-shaped exhaust ports on sides.
Fuselage. Long, bus-like with round, stepped-up cockpit; round, glassed-in nose section. Upswept rear section with tapered tail boom. Fixed landing gear.
Tail. Swept-back fin is tapered. Small rotor on right. Unequally tapered flats forward of the fin.

USER COUNTRIES

Algeria, CIS, Egypt, Iraq, Laos, Peru, Syria, Vietnam.

Mi-8 HIP (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Mi-17 Hip H, Puma, Mi-2 Hoplite, Super Frelon.
Crew. Two (three with flight engineer).
Role. Armed assault-transport (24 equipped troops, light weapons, and vehicles).
Armament. Rockets, antitank missiles, machine gun, bombs.
Dimensions. Length: 61 ft (18.32 m). Rotor diameter: 70 ft (21.3 m).

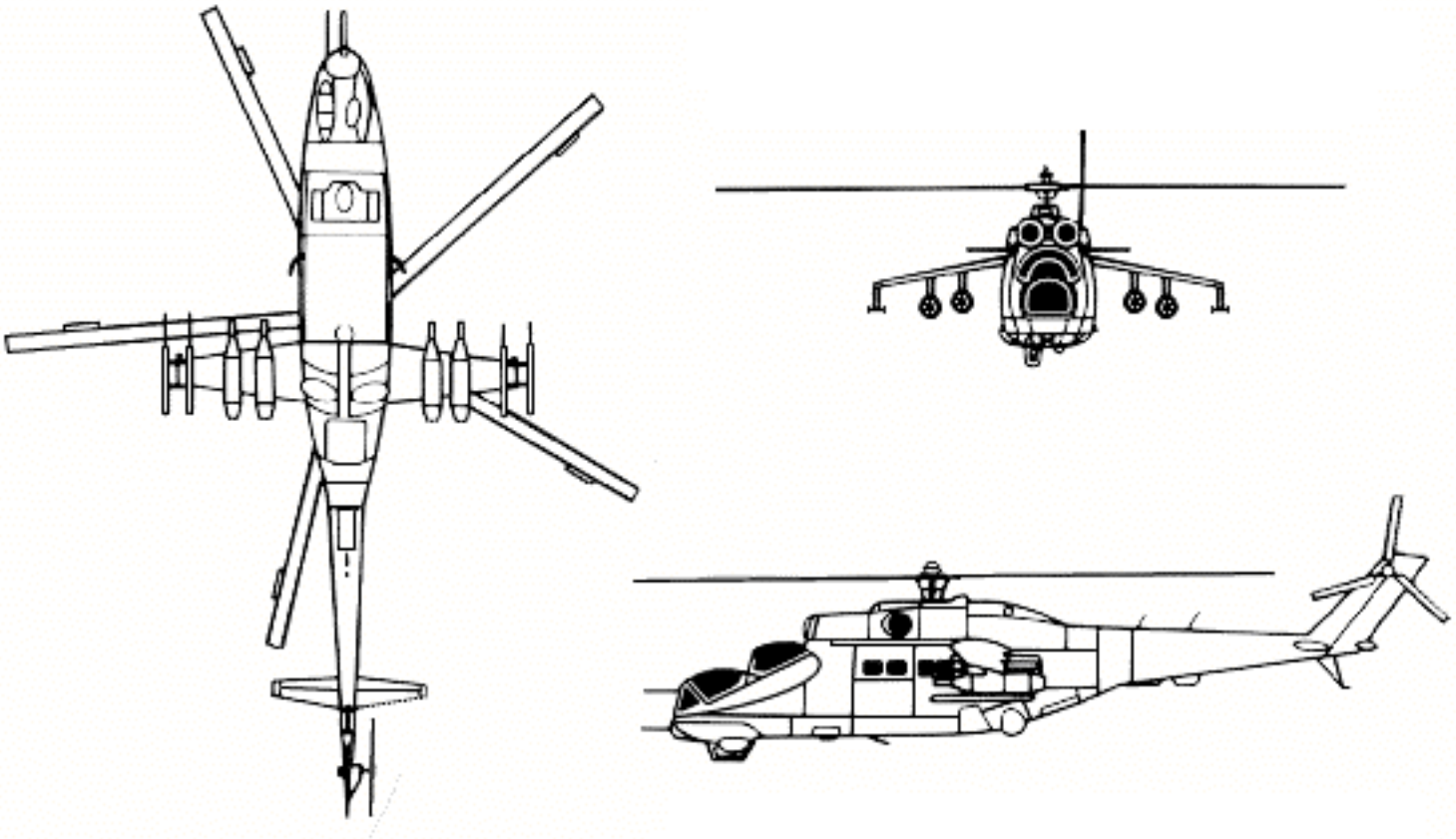
WEFT DESCRIPTION

Wings. Large, five-blade main rotor over the engine at the body midsection. Weapon-carrying platform at lower body midsection.
Engine(s). Twin turboshafts mounted on top of the fuselage. Two round air intakes just above the cockpit. Rounded exhaust ports.
Fuselage. Long, bus-like body with rounded nose and glassed-in cockpit. Two fuel pods offset and mounted low on the body. Upswept rear section. Tricycle landing gear.
Tail. Tail boom tapers to the small, swept-back, and tapered fin with rotor on top right or left. Small flats mounted forward of the fin.

USER COUNTRIES

Armenia, Azerbaijan, Afghanistan, Algeria, Angola, Belarus, Bulgaria, Cambodia, CIS, Croatia, Cuba, Czech Republic, Egypt, Germany, Guyana, Hungary, Iran, Iraq, Madagascar, Mongolia, Mozambique, Nicaragua, North Yemen, People’s Republic of China, Slovakia, SouthYemen, Sudan, Syria, Ukraine, Vietnam, Yugoslavia, Zambia.

Mi-24 HIND (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. AH-1 Cobra (all models), UH-60 Black Hawk, AH-64 Apache, Mangusta A129.
Crew. Two.
Role. Assault, gunship, antitank.
Armament. Missiles, guns, rockets.
Dimensions. Length: 55 ft (16.78 m). Rotor diameter: 55 ft, 6 in (17 m).

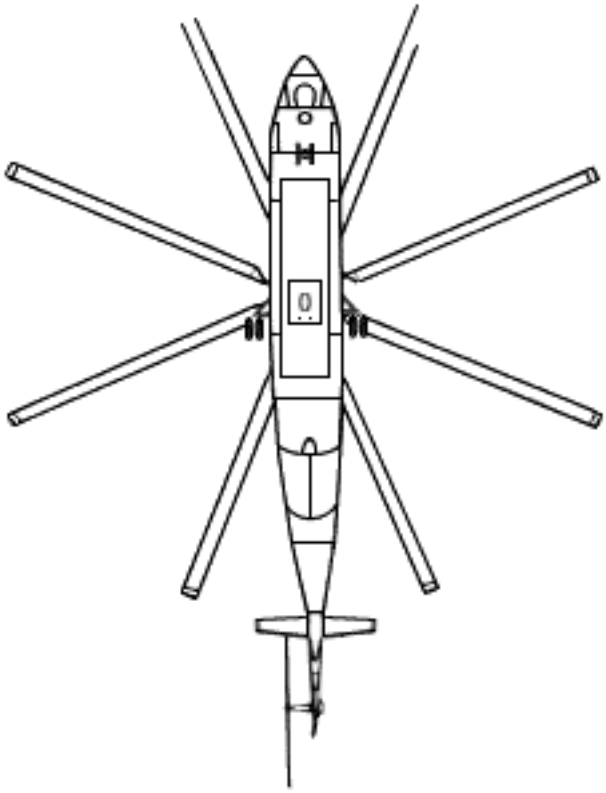
WEFT DESCRIPTION

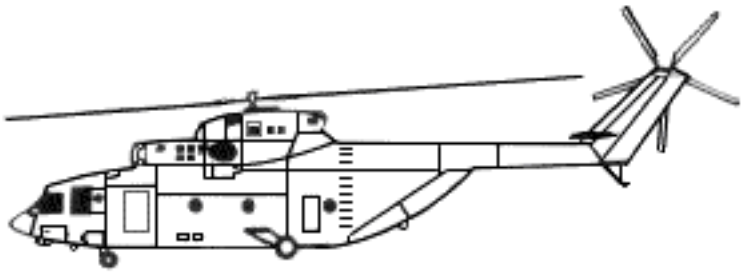
Wings. Five-blade main rotor mounted on top of fuselage midsection. Short, stubby, weapon-carrying wings mounted at midsection.
Engine(s). Two turboshafts mounted above body midsection. Two round air intakes located just above the cockpit. Exhaust ports on sides of engine(s).
Fuselage. Hind A: Large, oval-shaped body, glassed-in cockpit, and fuselage tapering at the rear to the tail boom. Hind D: Large, oval-shaped body, nose modification with tandem bubble canopies, and a chin-mounted turret.
Tail. Swept-back, tapered fin with rotor on right on some models. Tapered flats on boom just forward of the fin.

USER COUNTRIES

Armenia, Afghanistan, Algeria, Angola, Belarus, Bulgaria, Cambodia, CIS, Cuba, Czech Republic, Ethiopia, Georgia, Germany, Hungary, Iran, Iraq, Libya, Mongolia, Mozambique, Nicaragua, North Korea, Peru, Poland, Slovakia, South Yemen, Syria, Ukraine, Vietnam.

Mi-26 HALO (MIL)





GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Mi-6 Hook, HH-3E Jolly Green Giant.
Crew. Four.
Role. Heavy cargo-transport (100+ equipped troops, armored vehicles).
Armament. Usually none.
Dimensions. Length: 111 ft (33.8 m). Rotor diameter: 105 ft (32 m).

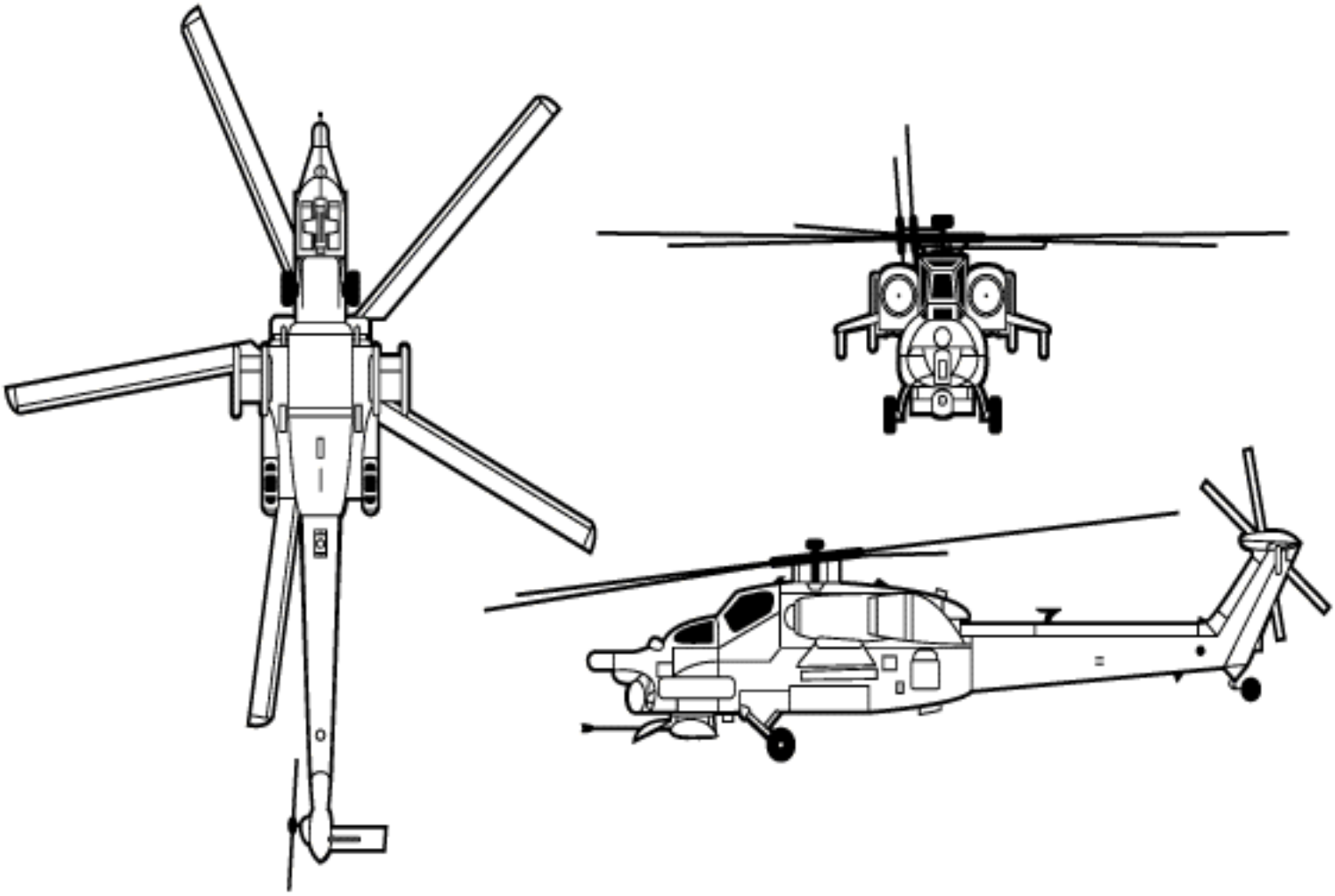
WEFT DESCRIPTION

Wings. Eight-blade main rotor mounted above the fuselage midsection on a hump.
Engine(s). Two turboshafts mounted on top of the cabin. Round air intakes above and behind the cockpit. Exhaust ports at sides of engines.
Fuselage. Long, bus-like body tapers to the nose and rear. Upswept rear section. Rounded nose and stepped-up cockpit. Fixed tricycle landing gear.
Tail. Swept-back, slightly tapered fin with large rotor on right side. Flats are forward-tapered and low-mounted on leading edge of the fin.

USER COUNTRIES

India, CIS.

Mi-28 HAVOC (MIL)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. Mangusta A129, AH-64 Apache, AH-1F Cobra.
Crew. Two.
Role. Attack.
Armament. AAMs, antitank missiles, cannon, rockets.
Dimensions. Length: 57 ft (17.4 m). Rotor diameter: 56 ft (17.04 m).

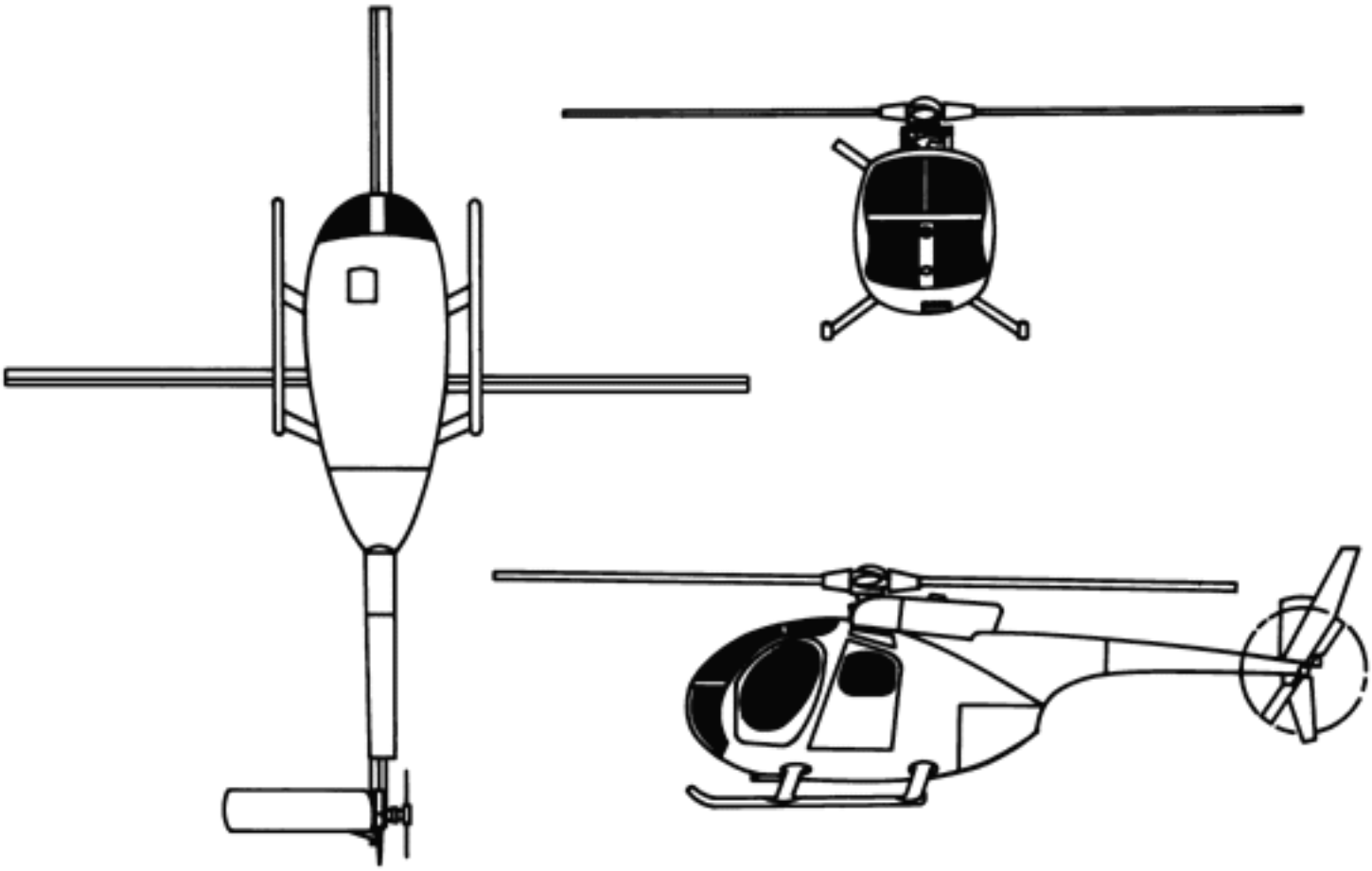
WEFT DESCRIPTION

Wings. Five-blade main rotor mounted above the body midsection. Short, wide, tapered, weapon-carrying wings mounted to the rear of body midsection.
Engine(s). Two turboshafts in pods mounted alongside the top of the fuselage. Downturned exhausts.
Fuselage. Slender and tapers to the tail boom and nose. Tandem, stepped-up cockpits. Cannon mounted beneath the belly. Fixed landing gear.
Tail. Tapering tail boom to swept-back fin. Flat high-mounted on the fin. Rotor mounted on right.

USER COUNTRY

CIS.

OH-6A CAYUSE (HUGHES)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Defender 500MD, BO 105.
Crew. One.
Role. Observation, liaison.
Armament. Usually none. Hardware available for minigun mount.
Dimensions. Length: 21 ft (6.4 m). Rotor diameter: 26 ft (7.92 m).

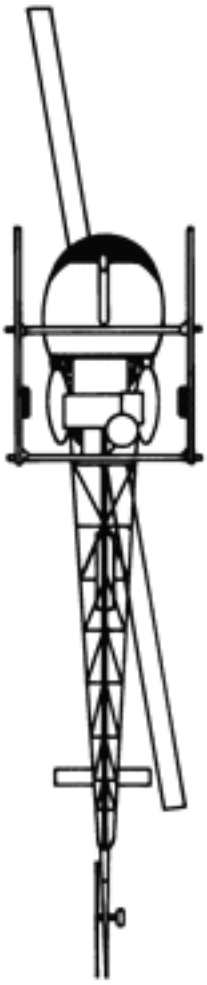
WEFT DESCRIPTION

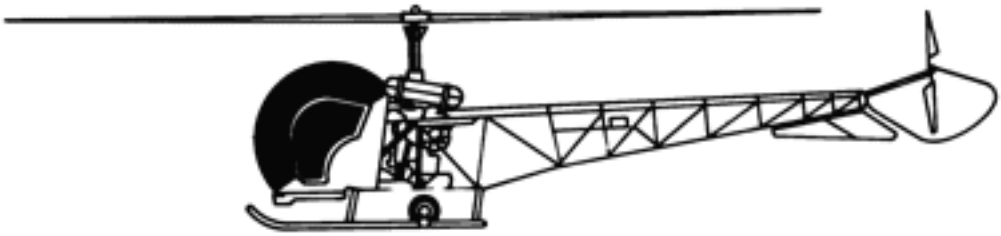
Wings. Four-blade main rotor mounted above the fuselage midsection.
Engine(s). One turboshaft located on the top rear of the fuselage.
Fuselage. Teardrop-shaped with round, glassed-in cockpit. Upswept rear section. Skid-type landing gear.
Tail. Y tail. Thin, tapering tail boom. Rotor on the left attached to the tail boom.

USER COUNTRIES

Brazil, Japan, Nicaragua, USA.

OH-13 SIOUX (BELL)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Alouette II, Alouette III, Gazelle, Scout/Wasp.
Crew. One.
Role. Utility, observation.
Armament. Minigun, rocket pods.
Dimensions. Length: 31 ft, 7 in (9.64 m). Rotor diameter: 37 ft (11.32 m).

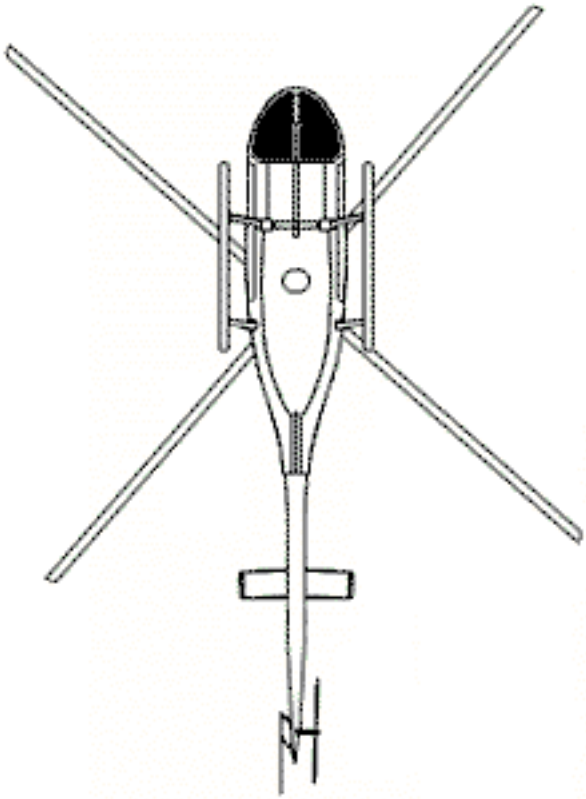
WEFT DESCRIPTION

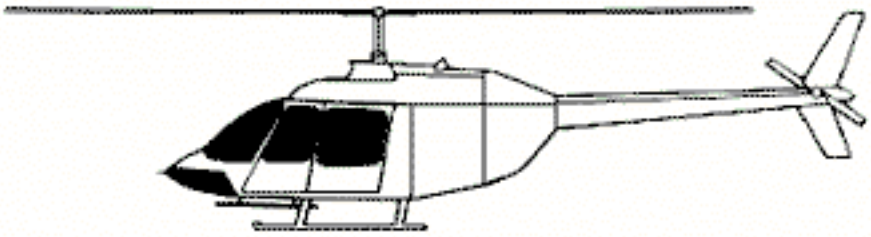
Wings. Dual-blade main rotor located above body midsection behind the cockpit.
Engine(s). One piston engine located inside latticework midsection behind the cockpit.
Fuselage. Round (goldfish bowl), glassed-in cockpit. Open-grid midsection and tail boom tapers to the rear. Belly fin. Skids with movable wheels attached for handling.
Tail. Small, rectangular flats. Small rotor centered at end of boom with rotor guard.

USER COUNTRIES

Brazil, Colombia, Spain, Thailand, Turkey, Uganda, USA.

OH-58D KIOWA (BELL)





GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Hirundo A109, Lynx, UH-1 Iroquois, UH-1N Model 212.
Crew. Two.
Role. Utility, scout, observation.
Armament. 7.62-mm minigun.
Dimensions. Length: 31 ft (9.45 m). Rotor diameter: 33 ft, 4 in (10.16 m).

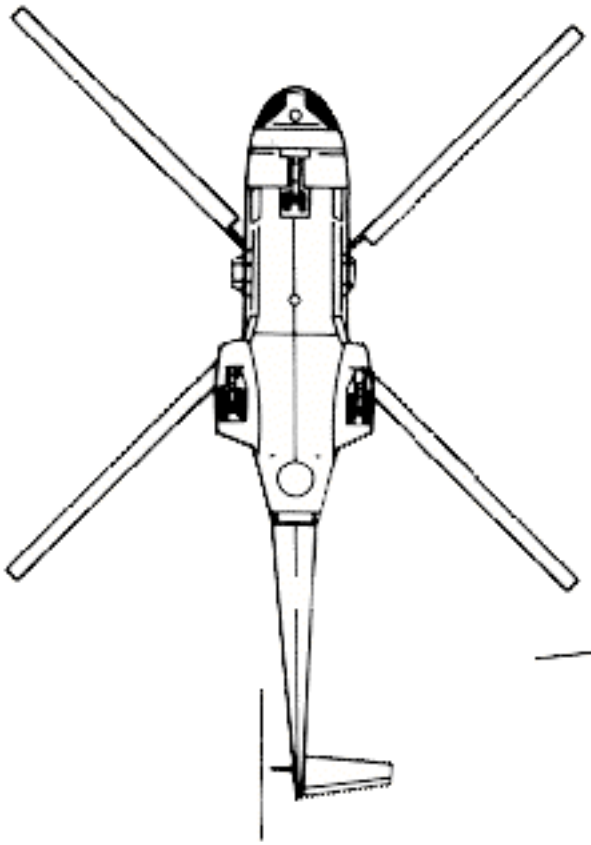
WEFT DESCRIPTION

Wings. Two-blade main rotor on top of aircraft midsection.
Engine(s). One engine on top rear of midsection in a hump-like fairing.
Fuselage. Oval body, pointed nose, and tapered rear section to a mid-mounted tail boom.
Tail. Mid-mounted, rectangular flats. Swept-back and tapered fin that is boomerang-shaped. Rotor on the left.

USER COUNTRIES

Australia, Austria, Bangladesh, Brunei, Canada, Chile, Colombia, Guatemala, Guyana, Jamaica, Japan, Kenya, Libya, Morocco, Nepal, Oman, North Yemen, Saudi Arabia, South Korea, Sri Lanka, Tanzania, Thailand, United Arab Emirates, USA, Venezuela.

PUMA (AEROSPATIALE, WESTLAND)



GENERAL DATA

Countries of Origin. France, UK.
Similar Aircraft. Super Frelon, HH-3E Jolly Green Giant, SH-3 Sea King, CH-53 Sea Stallion, Mi-8 Hip, UH-60 Black Hawk.
Crew. Two.
Role. Armed transport (16 equipped troops).
Armament. Cannon, missiles, machine guns, rockets.
Dimensions. Length: 46 ft (14 m). Rotor diameter: 49 ft (14.96 m).

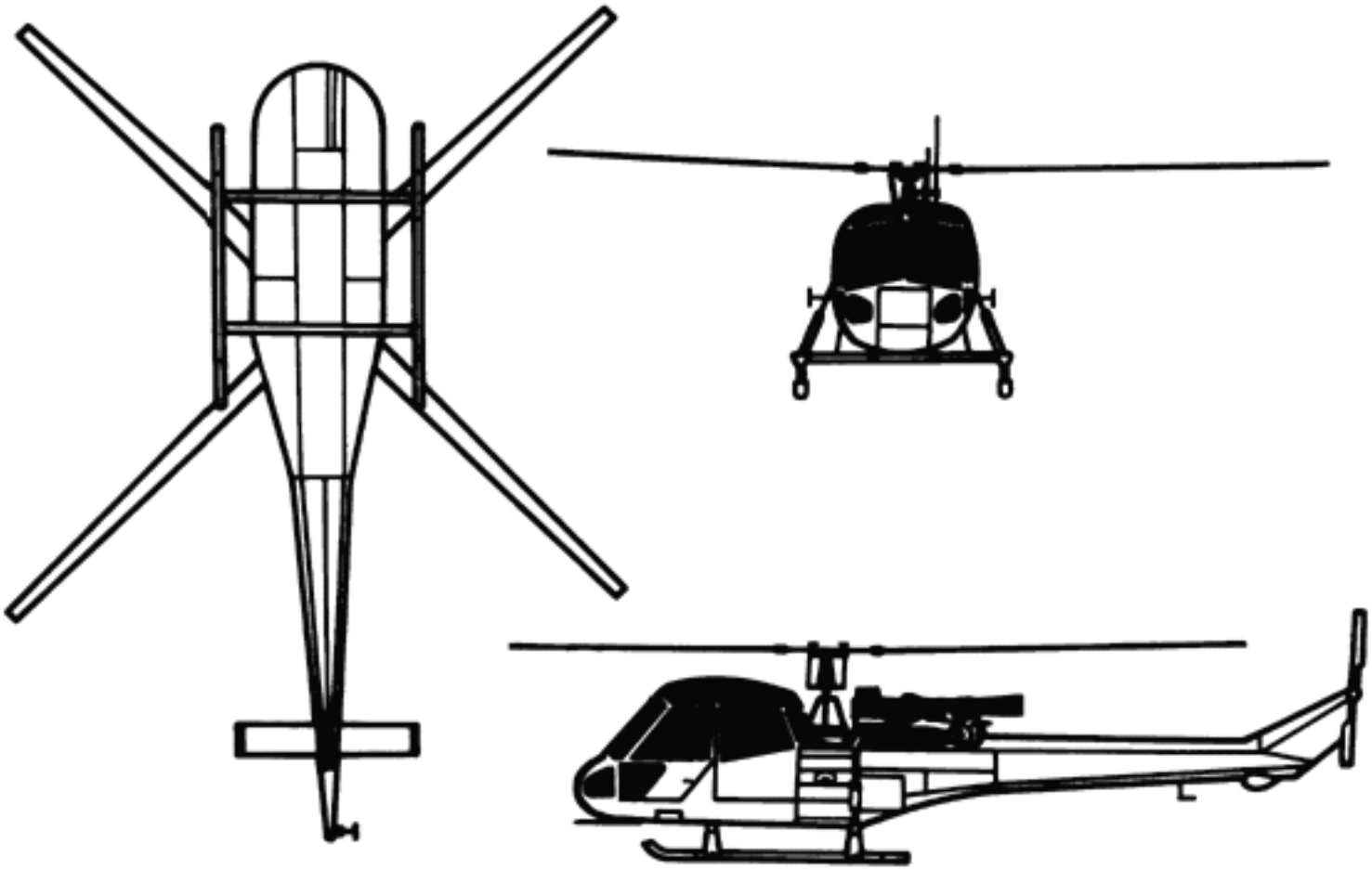
WEFT DESCRIPTION

Wings. Large, four-blade main rotor mounted above center of fuselage on a hump.
Engine(s). Two turboshaft engines mounted on top of fuselage midsection giving the helicopter a humpbacked appearance.
Fuselage. Long, rectangular, upswept, and tapered rear section. Rounded, stepped-up, glassed-in cockpit. Retractable landing gear.
Tail. Swept-back and tapered fin. Rotor on the right. Tapered, single flat on left top of the fin.

USER COUNTRIES

Algeria, Argentina, Belgium, Brazil, Chad, Chile, Djibouti, Ecuador, France, Gabon, Germany, Iceland, Indonesia, Iraq, Ivory Coast, Jordan, Kenya, Kuwait, Lebanon, Libya, Malawi, Mexico, Morocco, Nepal, Nigeria, Oman, Pakistan, Panama, Philippines, Portugal, Senegal, Singapore, South Africa, Spain, Sudan, Switzerland, Togo, United Arab Emirates, UK, Zaire.

SCOUT, WASP (WESTLAND)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. Alouette II, Alouette III, Gazelle, OH-13 Sioux.
Crew. One.
Role. Utility.
Armament. Accommodations for antitank missiles, cannon, rockets.
Dimensions. Length: 30 ft, 4 in (9.26 m). Rotor diameter: 32 ft, 3 in (9.84 m).

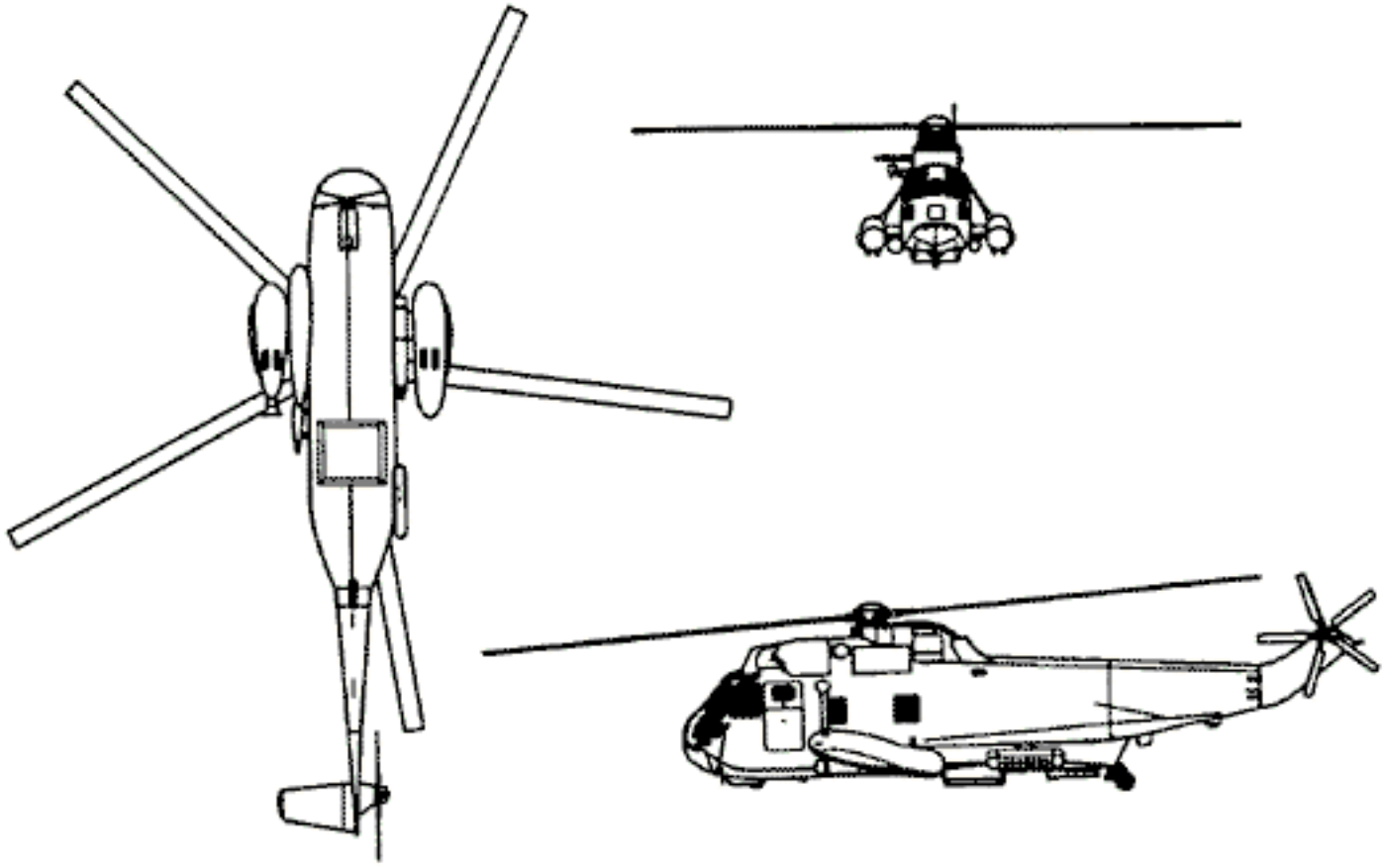
WEFT DESCRIPTION

Wings. Four-blade main rotor mounted on a shaft behind the cabin and between the cabin and engine.
Engine(s). One turboshaft mounted behind rear of cabin (exposed).
Fuselage. Rounded nose, stepped-up, glassed-in cockpit, including top; slightly tapered rear section. Fixed landing gear.
Tail. Swept-back, tapered fin with small rotor on the left. Rectangular flats (Army version) mounted to the underside of boom below the fin.

USER COUNTRIES

Brazil, Indonesia, Malaysia, New Zealand, UK.

SH-3 SEA KING (SIKORSKY)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. HH-3E Jolly Green Giant, CH-53 Sea Stallion, Super Frelon, Puma.
Crew. Two on flight deck; two in main cabin.
Role. Amphibious assault-transport (30 equipped troops), antisubmarine, search and rescue.
Armament. Homing torpedoes, depth charges, cannon, rockets, missiles.
Dimensions. Length: 56 ft (16.97 m). Rotor diameter: 62 ft (18.92 m).

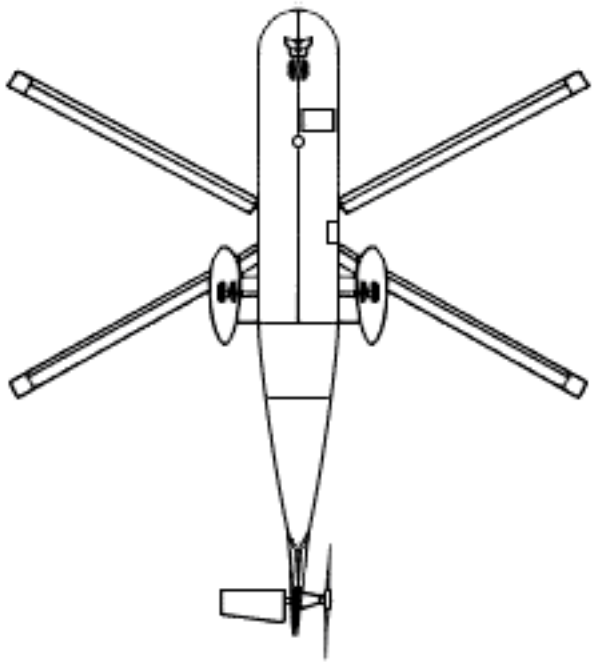
WEFT DESCRIPTION

Wings. Large, five-blade main rotor on top of fuselage midsection.
Engine(s). Two turboshaft engines mounted on top of cabin. Circular air intakes above cockpit. Oval exhausts on sides of engines.
Fuselage. Long, thick, box-like with blunt nose. Tapered cockpit. Boat-hull shape. Upswept rear section. Retractable landing gear. Third wheel of landing gear is fixed.
Tail. Swept-back fin is tapered. Rotor on left side. Single flat is tapered with square tip mounted at the top right side of fin.

USER COUNTRIES

Argentina, Australia, Belgium, Brazil, Canada, Egypt, Germany, India, Iran, Iraq, Italy, Norway, Pakistan, Peru, Spain, UK, USA.

SUPER FRELON (AEROSPATIALE)



GENERAL DATA

Country of Origin. France.
Similar Aircraft. Puma, SH-3 Sea King, CH-53 Sea Stallion, HH-3E Jolly Green Giant, Mi-8 Hip.
Crew. Two on flight deck; three in main cabin.
Role. Assault-transport (38 equipped troops), naval operations.
Armament. Torpedoes.
Dimensions. Length: 75 ft, 7 in (23.02 m). Rotor diameter: 62 ft (18.92 m).

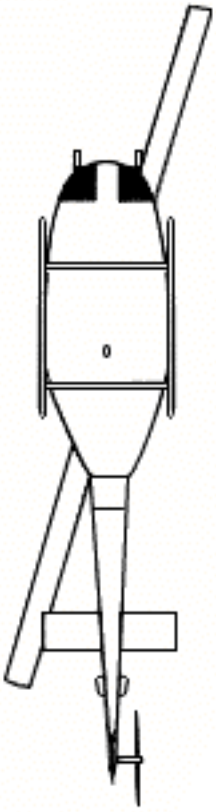
WEFT DESCRIPTION

Wings. Six-blade main rotor mounted above center of fuselage.
Engine(s). Three turboshafts. Two are mounted side-by-side atop the fuselage forward of main rotor; the third is behind the main rotor. Round air intakes above and behind cockpit.
Fuselage. Boat-hull type with stabilizing floats on either side of body. Nose is round with glassed-in cockpit. Upswept rear section. Fixed landing gear.
Tail. Boom tapers from main body to swept-back, tapered fin. Rotor on left. Single, tapered, and and flat-mounted on the right side of fin.

USER COUNTRIES

France, Iraq, Israel, Libya, People’s Republic of China, Zaire.

UH-1 IROQUOIS (BELL)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. UH-1N Model 212, OH-58 Kiowa, Lynx, Hirundo A109.
Crew. Two.
Role. Utility transport (seven equipped troops).
Armament. Missiles, rockets, machine guns.
Dimensions. Length: 42 ft (12.79 m). Rotor diameter: 48 ft (14.64 m).

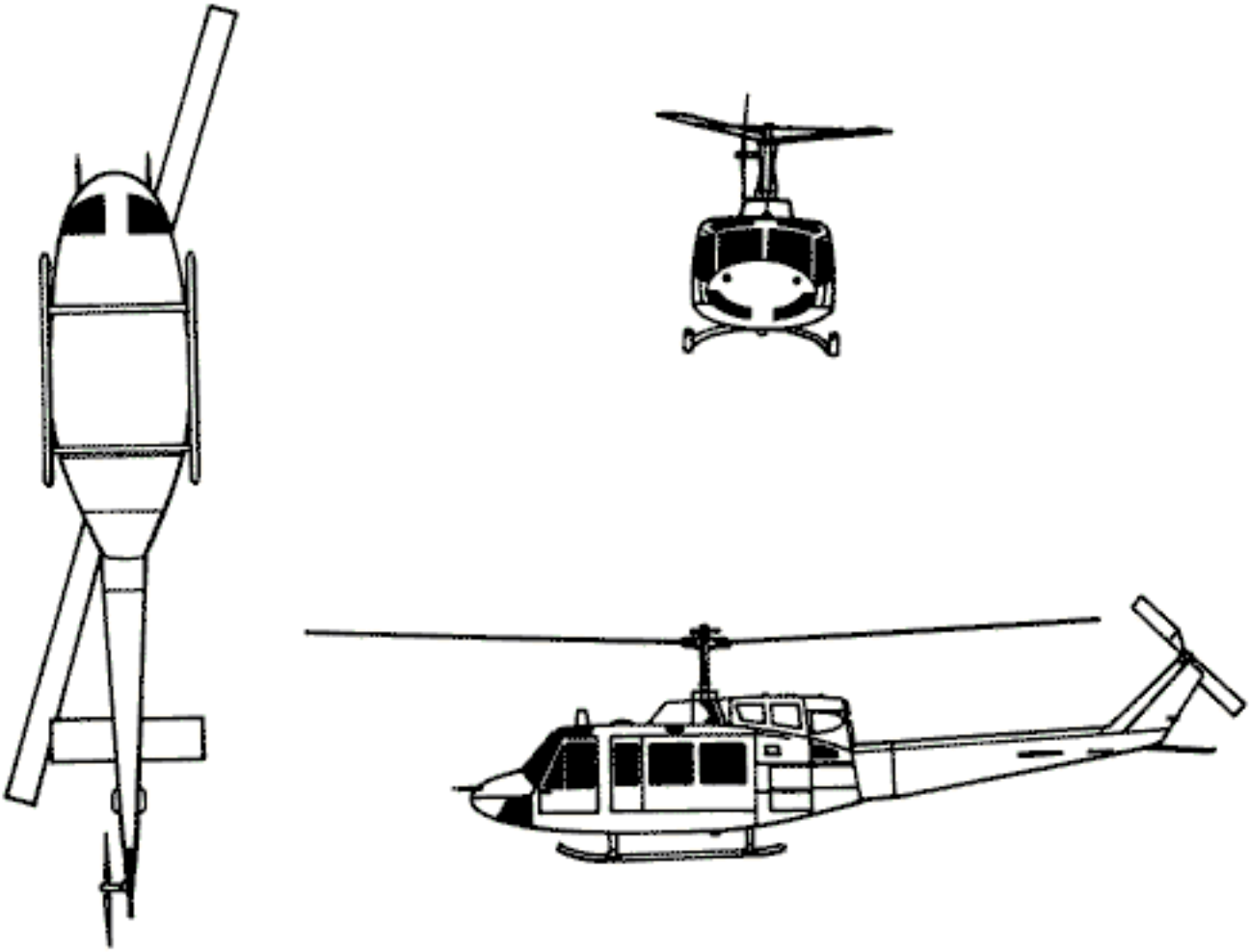
WEFT DESCRIPTION

Wings. Dual-blade main rotor mounted over the cabin.
Engine(s). One turboshaft on top rear of cabin.
Fuselage. Long, oval body, with tapered rear. Rounded nose. Stepped-up cockpit. Swell in center of cabin. Landing skids.
Tail. Mid-mounted, rectangular flats with square tips. Swept-back fin with rotor on the left.

USER COUNTRIES

Argentina, Australia, Austria, Bolivia, Brazil, Burma, Canada, Chile, Colombia, Ecuador, El Salvador, Ethiopia, Finland, Germany, Greece, Guatemala, Honduras, Indonesia, Iran, Italy, Israel, Japan, Malta, Mexico, Morocco, New Zealand, North Yemen, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Saudi Arabia, Singapore, Somalia, South Korea, Spain, Suriname, Taiwan, Tanzania, Thailand, Tunisia, Turkey, Uganda, United Arab Emirates, Uruguay, USA, Venezuela, North Yemen, Zambia.

UH-1N MODEL 212 (BELL)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. UH-1 Iroquois, OH-58 Kiowa, Lynx, Hirundo A109.
Crew. Two (three with crew chief).
Role. General purpose utility, naval operations.
Armament. ASMs, homing torpedoes, depth charges.
Dimensions. Length: 42 ft (12.79 m). Rotor diameter: 48 ft (14.64 m).

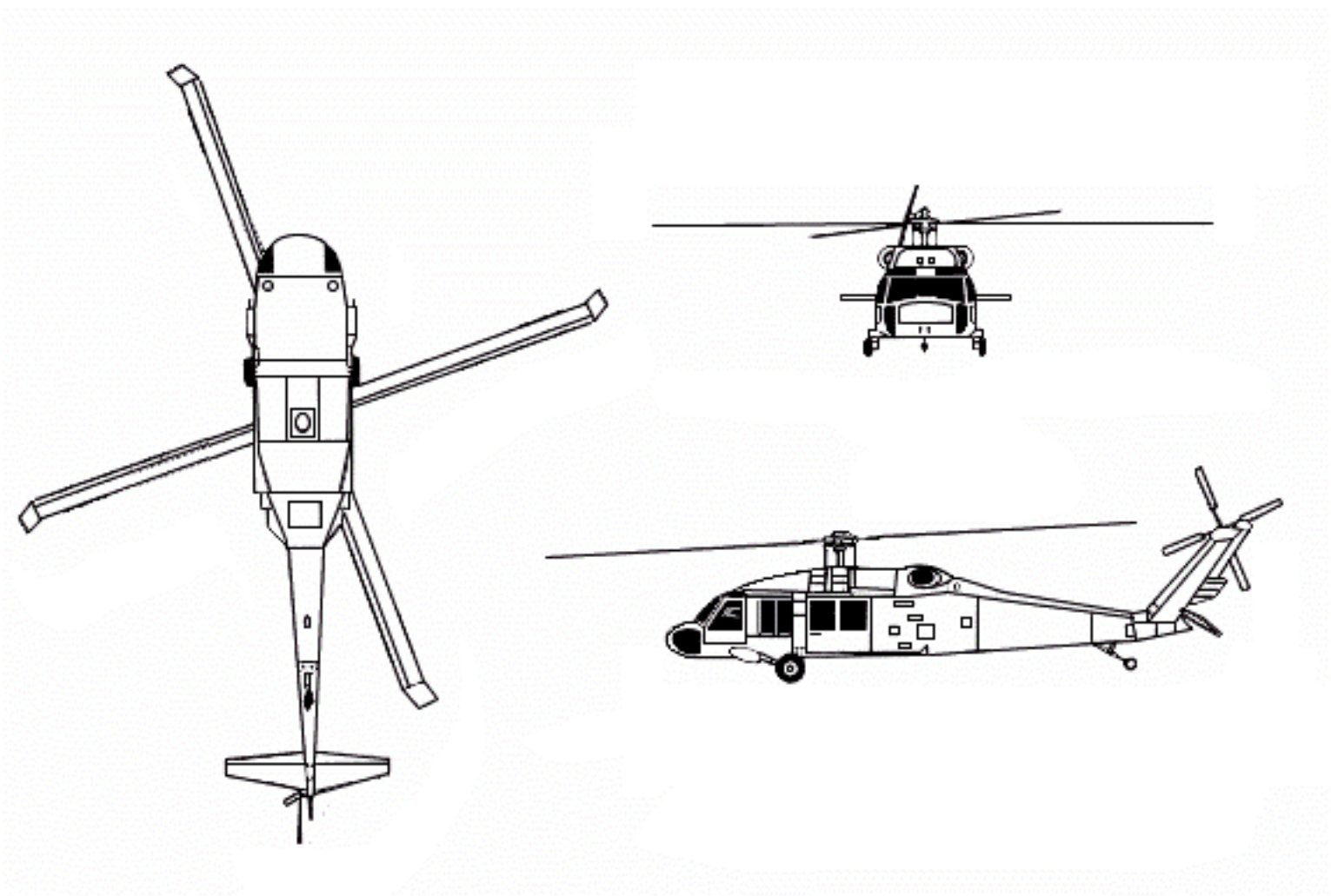
WEFT DESCRIPTION

Wings. Large, dual-blade main rotor on hump at top rear of cabin.
Engine(s). Two turboshafts with a combining gear box. Air intakes in front of engine.
Fuselage. Long and oval with rounded nose. Stepped-up cockpit and tapered rear section. Swell in center of cabin. Fixed-skid landing gear.
Tail. Boom tapers to swept-back, tapered fin with rotor on the right. Rectangular flats mounted on the boom forward of the fin.

USER COUNTRIES

Argentina, Austria, Bangladesh, Botswana, Brunei, Canada, Ecuador, Ghana, Guatemala, Guyana, Iran, Israel, Italy, Jamaica, Japan, Mexico, Morocco, Nigeria, North Yemen, Panama, Paraguay, Peru, Philippines, Saudi Arabia, Somalia , South Korea, Sri Lanka, Sudan, Thailand, Turkey, Uganda, USA, Venezuela, Zambia.

UH-60A BLACK HAWK (SIKORSKY)



GENERAL DATA

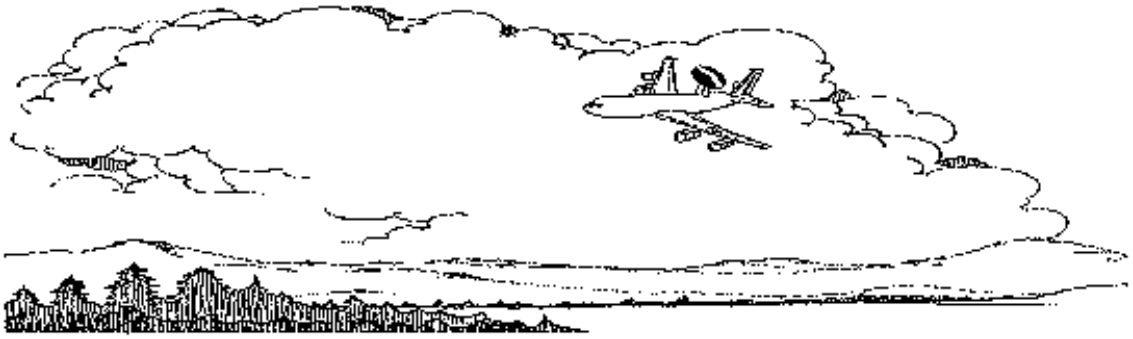
Country of Origin. USA.
Similar Aircraft. Hirundo A109, Mi-24 Hind, Mi-8 Hip, Puma.
Crew. Two.
Role. Assault-transport (11 equipped troops), multipurpose.
Armament. Hellfire missiles, machine guns, rockets, mine dispensers.
Dimensions. Length: 51 ft (15.25 m). Rotor diameter: 53 ft, 8 in (16.9 m).

WEFT DESCRIPTION

Wings. Four-blade main rotor with swept-back tips mounted on top center of fuselage.
Engine(s). Two turboshaft engines within a hump on top of fuselage. Semicircular air intakes. Oval exhausts.
Fuselage. Slender, rectangular fuselage tapers to the rear. Rounded nose with stepped cockpit. Fixed landing gear.
Tail. Boom tapers to a high, swept-back fin with tail rotor on right. Large, unequally tapered flat mounted low on the fin.

USER COUNTRIES

Colombia, Israel, Spain (SH-60), USA.



CHAPTER 11

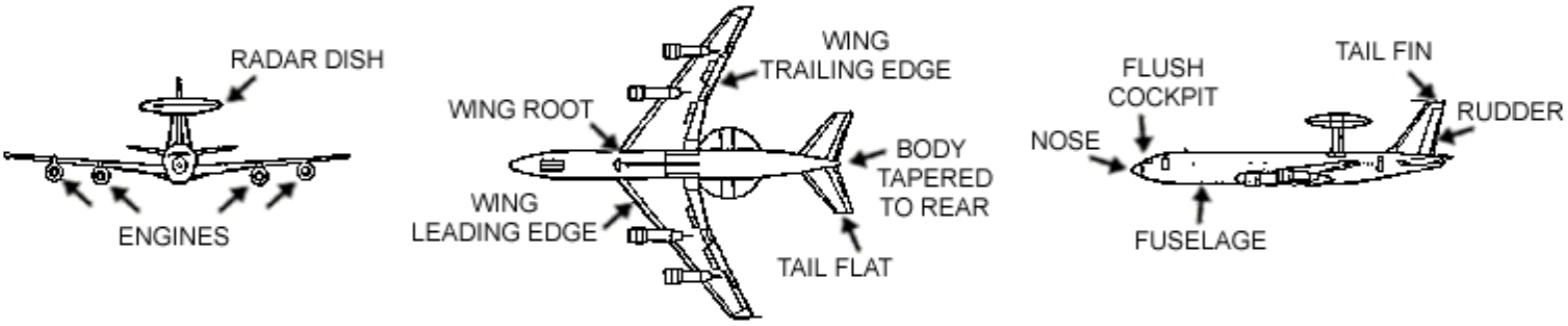
Early Warning, Observation, and Reconnaissance Aircraft

This chapter features early warning, observation, and reconnaissance aircraft that are built and used for special purposes. There are aircraft shown in other chapters that can and are used in these roles, but not as the aircraft's primary mission.

Some aircraft covered in this chapter are high-flying and will not be seen within range of FAAD guns and missiles. Other types shown will be within range and operating low enough to be recognized for an engagement decision.

For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. The following illustration shows early warning, observation, and reconnaissance aircraft WEFT description features. Line drawings are not to scale.

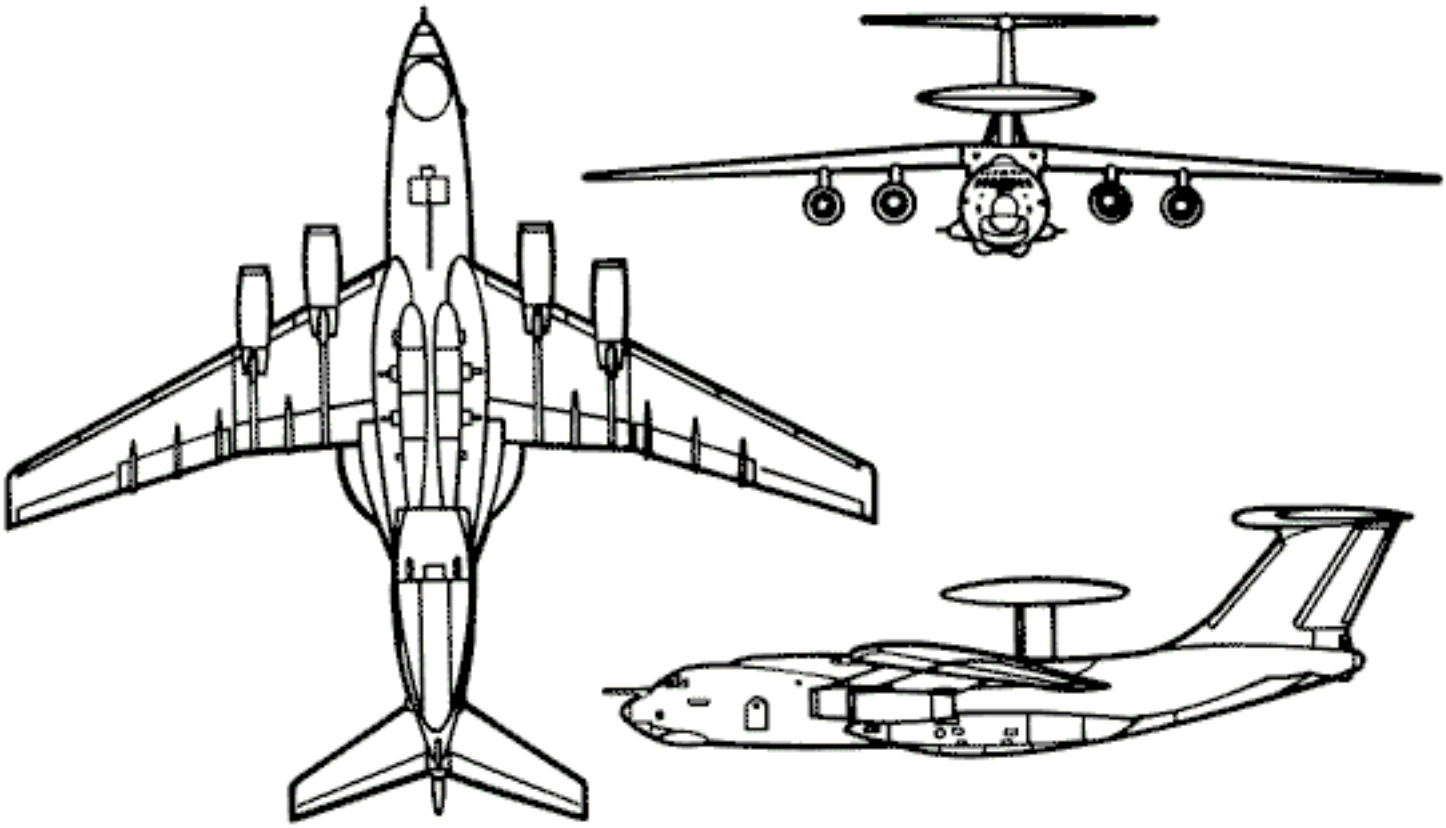
WEFT DESCRIPTION FEATURES



Chapter 11 Aircraft List

A-50 Mainstay	EF-111A Raven	P-3C Orion
E-2C Hawkeye	Il-20 Coot-A	S-2 Tracker
E-3A Sentry	Nimrod AEW3	S-3A Viking
EA-6B Prowler	OV-1 Mohawk	.

A-50 MAINSTAY (ILYUSHIN)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. E-3 Sentry.
Crew. Seven.
Role. AEW, control.
Armament. Tail turret.
Dimensions. Length: 152 ft, 8 in (46.5 m). Span: 165 ft, 6 in (50.5 m).

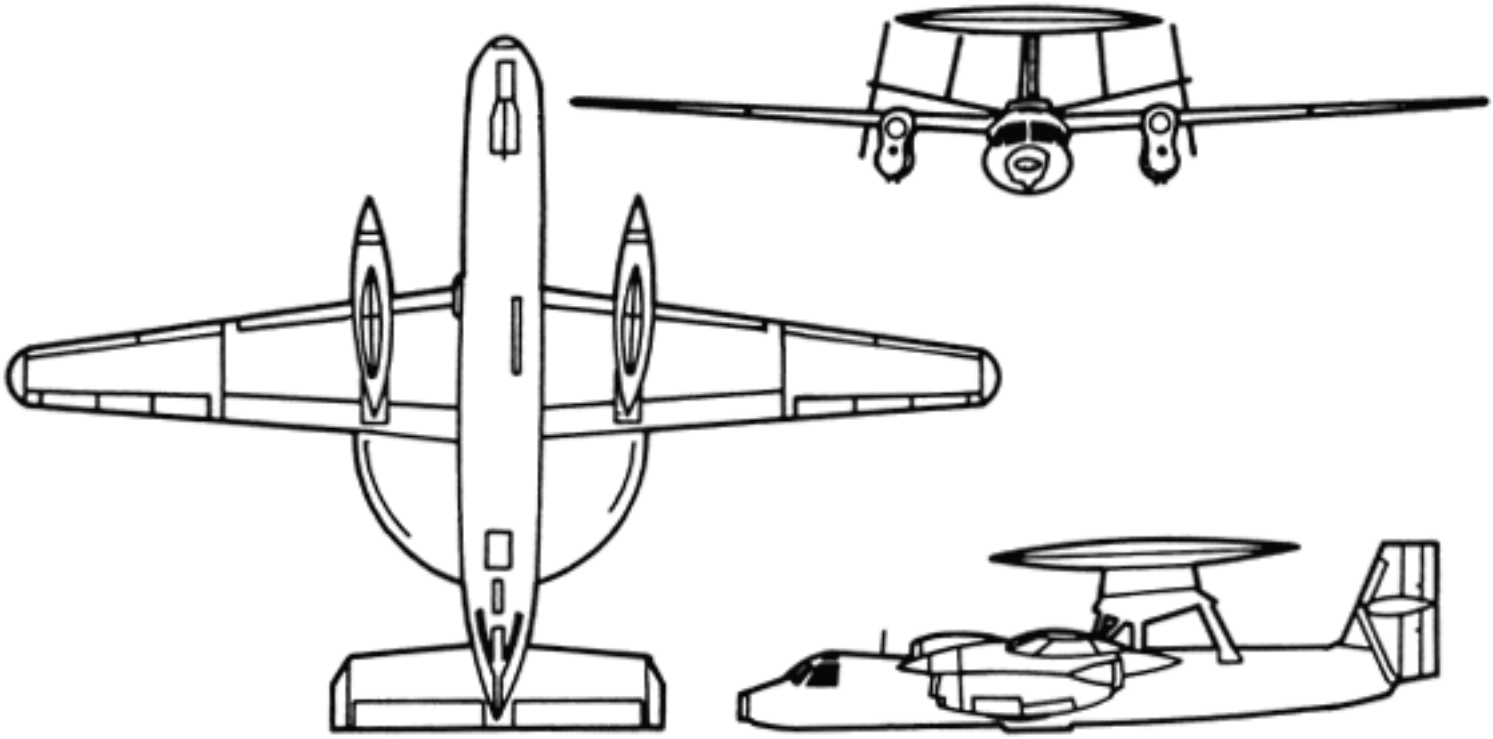
WEFT DESCRIPTION

Wings. High-mounted, swept-back, and tapered with blunt tips.
Engine(s). Four turbofans mounted on pylons under and extending beyond the wings' leading edges.
Fuselage. Long, round tapering to the rear with a radome on the chin. Saucer type radome on top of the aircraft. Stepped-up cockpit.
Tail. Flats swept-back and tapered with blunt tips high-mounted on the swept-back, tapered fin, forming a T.

USER COUNTRY

CIS.

E-2C HAWKEYE (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. G.222, C-160 Transall.
Crew. Five.
Role. AEW.
Armament. None.
Dimensions. Length: 57 ft, 6 in (17.53 m). Span: 80 ft, 6 in (24.6 m).

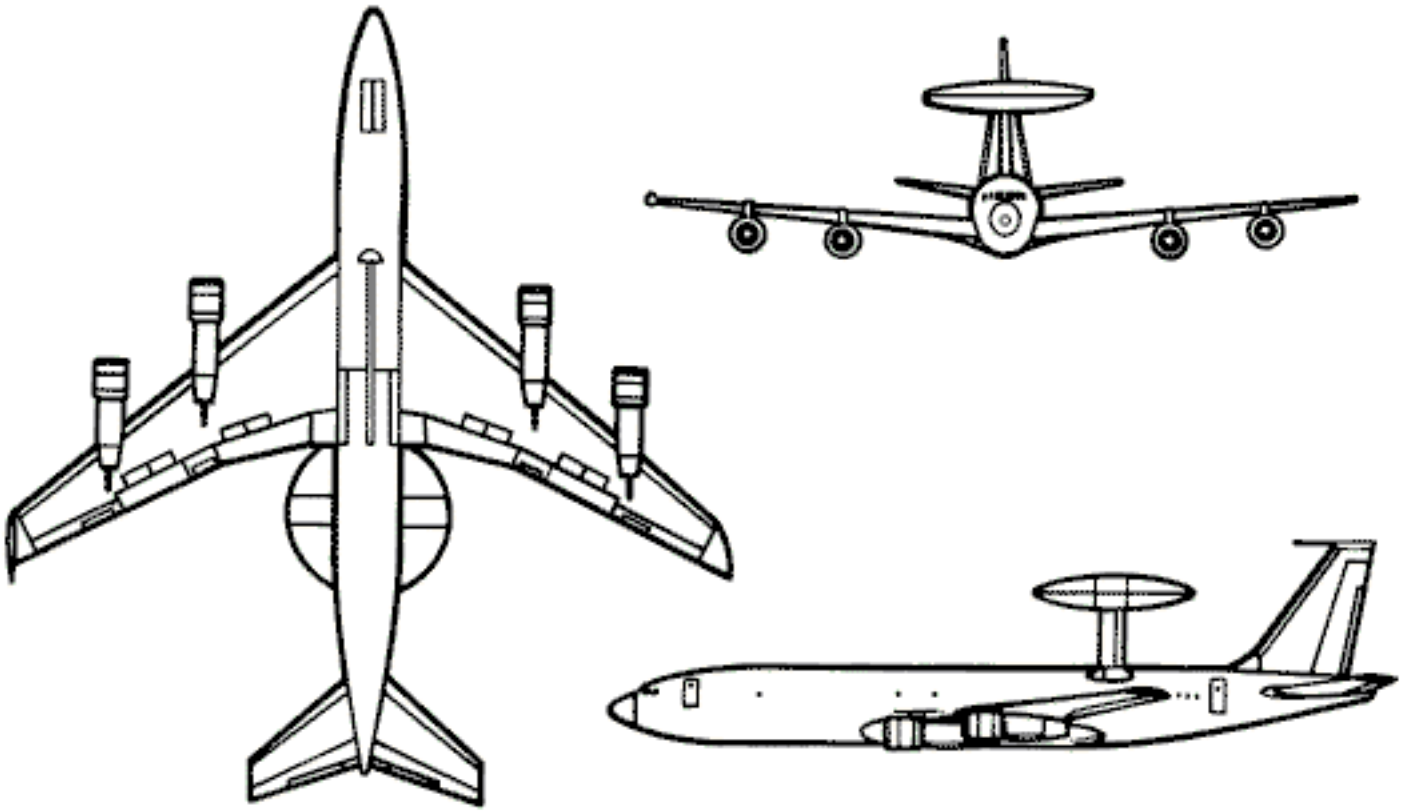
WEFT DESCRIPTION

Wings. High-mounted and equally tapered with blunt tips.
Engine(s). Two turboprops mounted under the wings. Engines extend well beyond the wings' leading edges.
Fuselage. Oval that tapers to the rear. Rounded nose. Stepped-up cockpit. Large radome.
Tail. Four fins (two fins are mounted on the tips of the flats and extend below the flats; the two inside fins are mounted on top of the flats). Flats are high-mounted on the fuselage and have a positive slant.

USER COUNTRIES

Egypt, Israel, Japan, Singapore, USA.

E-3A SENTRY (BOEING)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. A-50 Mainstay.
Crew. Seventeen.
Role. AWACS.
Armament. None.
Dimensions. Length: 152 ft, 9 in (46.6 m). Span: 154 ft, 7 in (44.4 m).

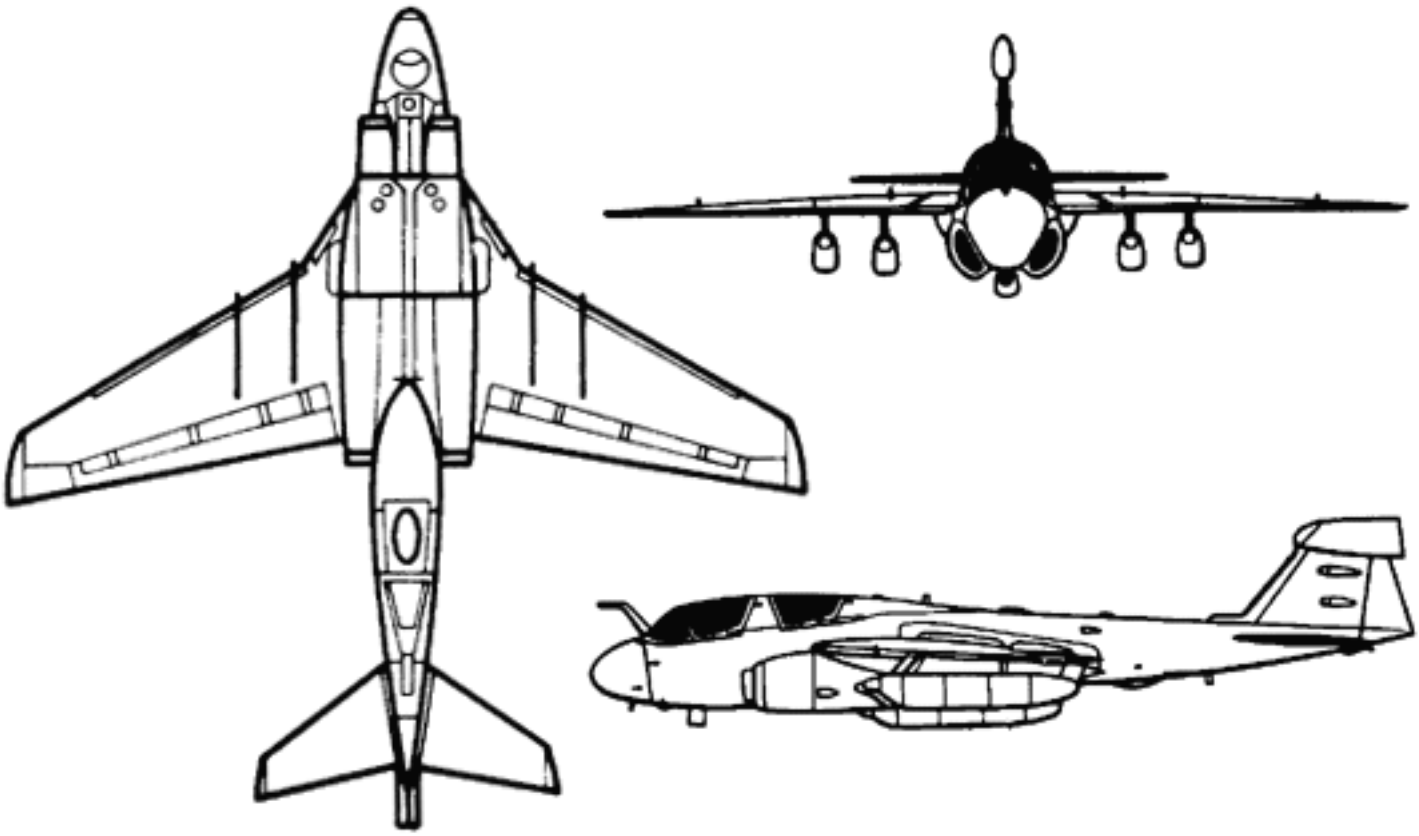
WEFT DESCRIPTION

Wings. Low-mounted, swept-back, and tapered with a positive slant. An electronics pod is mounted on the right wing-tip.
Engine(s). Four turbojets mounted on pylons under the wings. Engines extend well forward of the wings' leading edges.
Fuselage. Round, cigar-shaped, tapers to the rear. Rounded nose, stepped-up cockpit. Large radome on top of the body between the wings and tail section.
Tail. Swept-back, tapered fin with a square tip. Flats are swept-back, tapered, and mid-mounted on the fuselage.

USER COUNTRIES

Israel, Luxembourg (NATO), Saudi Arabia, USA.

EA-6B PROWLER (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Hunter, A-6 Intruder.
Crew. Four; A-6 Intruder--two.
Role. ECM.
Armament. HARM.
Dimensions. Length: 59 ft 10 in (18.24 m). Span: 53 ft (16.15 m).

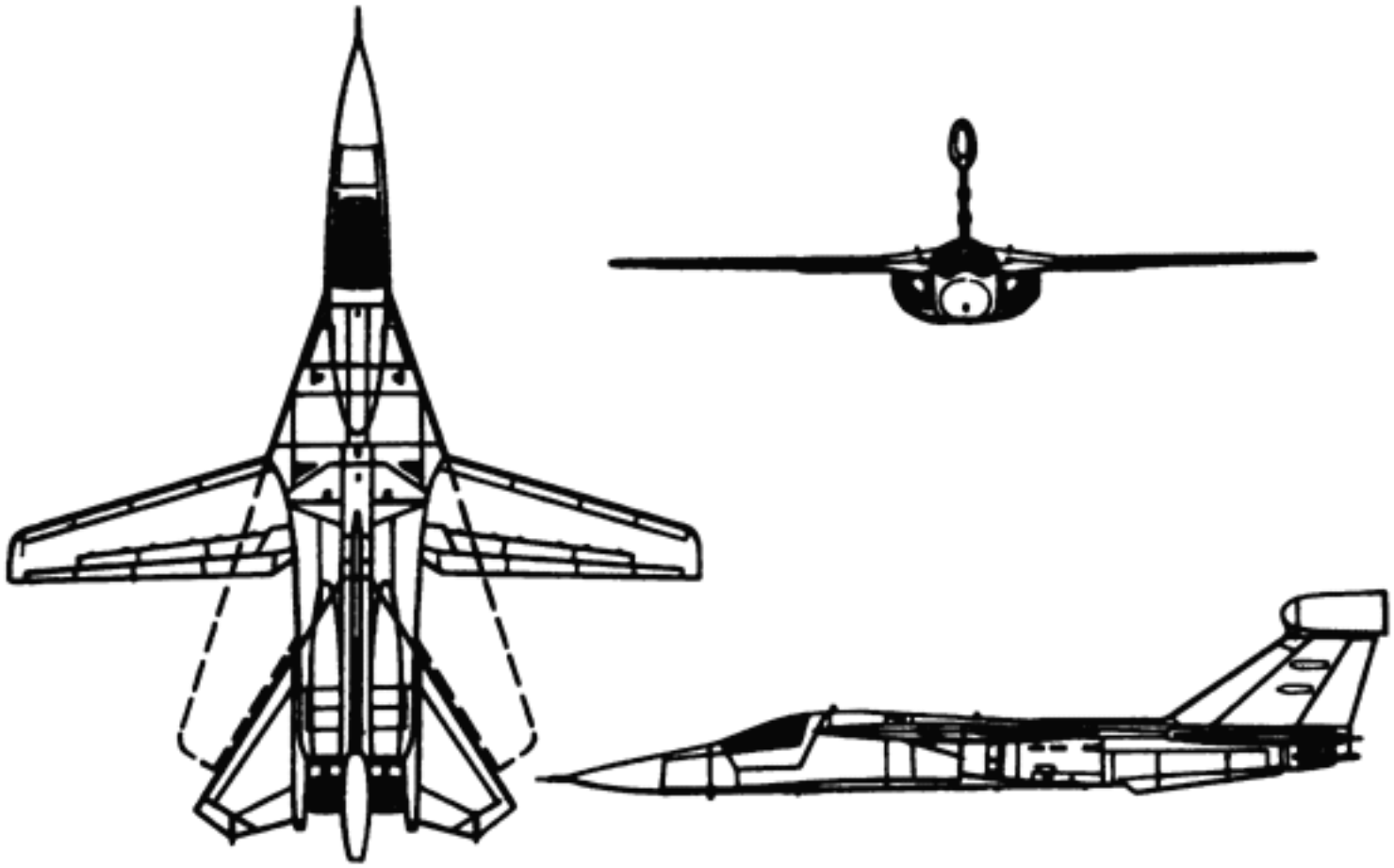
WEFT DESCRIPTION

Wings. Mid-mounted, swept-back, and tapered with blunt tips.
Engine(s). Two turbojets mounted on body midsection. Semicircular air intakes below and forward of the wing roots. Exhausts are in the trailing edges of the wing roots.
Fuselage. Teardrop-shaped with a rounded nose. Body tapers to the rear section. Long, stepped canopy with added enclosure for ECM operators.
Tail. Unequally tapered tail fin with ECM pod at the top. There is a small fairing in the leading edge. Swept-back, tapered tail flats high-mounted on the fuselage with blunt tips.

USER COUNTRY

USA.

EF-111A RAVEN (GENERAL DYNAMICS)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. F-111, Tornado, Su-24 Fencer, MiG-23/27 Flogger.
Crew. Two.
Role. ECM.
Armament. Usually none.
Dimensions. Length: 77 ft (23.4 m).
Span: 63 ft (19.2 m). Swept: 31 ft, 9 in (9.7 m).

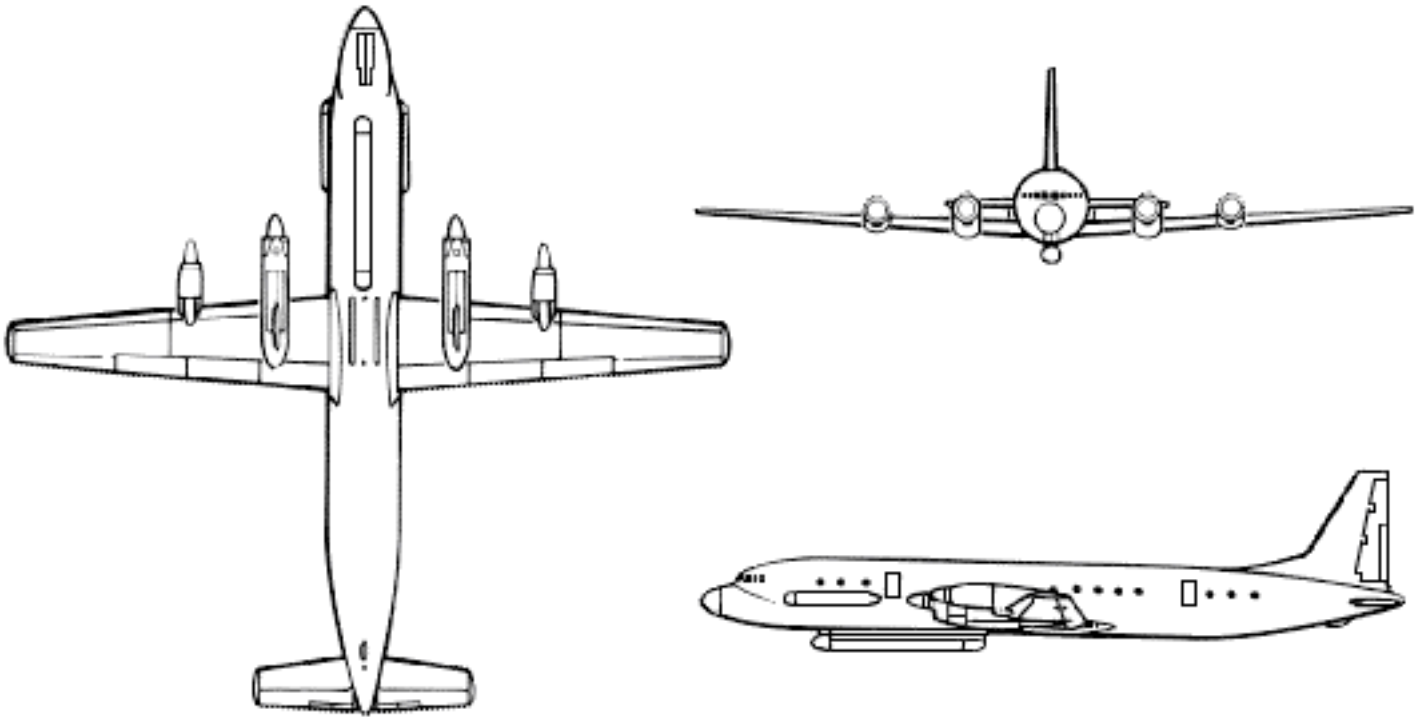
WEFT DESCRIPTION

Wings. High-mounted, variable, swept-back, and tapered with blunt tips. Wing span changes in flight.
Engine(s). Two turbojets mounted in the rear section. Air intakes are 1/4 pie-shaped under the wings giving the aircraft a rounded appearance from the head-on view.
Fuselage. Long with a long, pointed nose and a bubble canopy.
Tail. Swept-back, tapered fin with an electronics pod at the tip. Large tail flats are swept-back, tapered with clipped tips, and high-mounted on the fuselage.

USER COUNTRY

USA.

Il-20 COOT-A (ILYUSHIN)



GENERAL DATA

Country of Origin. CIS (formerly USSR).
Similar Aircraft. P-3C Orion, An-24 Coke, An-12 Cub.
Crew. Five.
Role. Electronics surveillance.
Armament. None.
Dimensions. Length: 117 ft, 9 in (35.9 m). Span: 122 ft, 7 in (37.4 m).

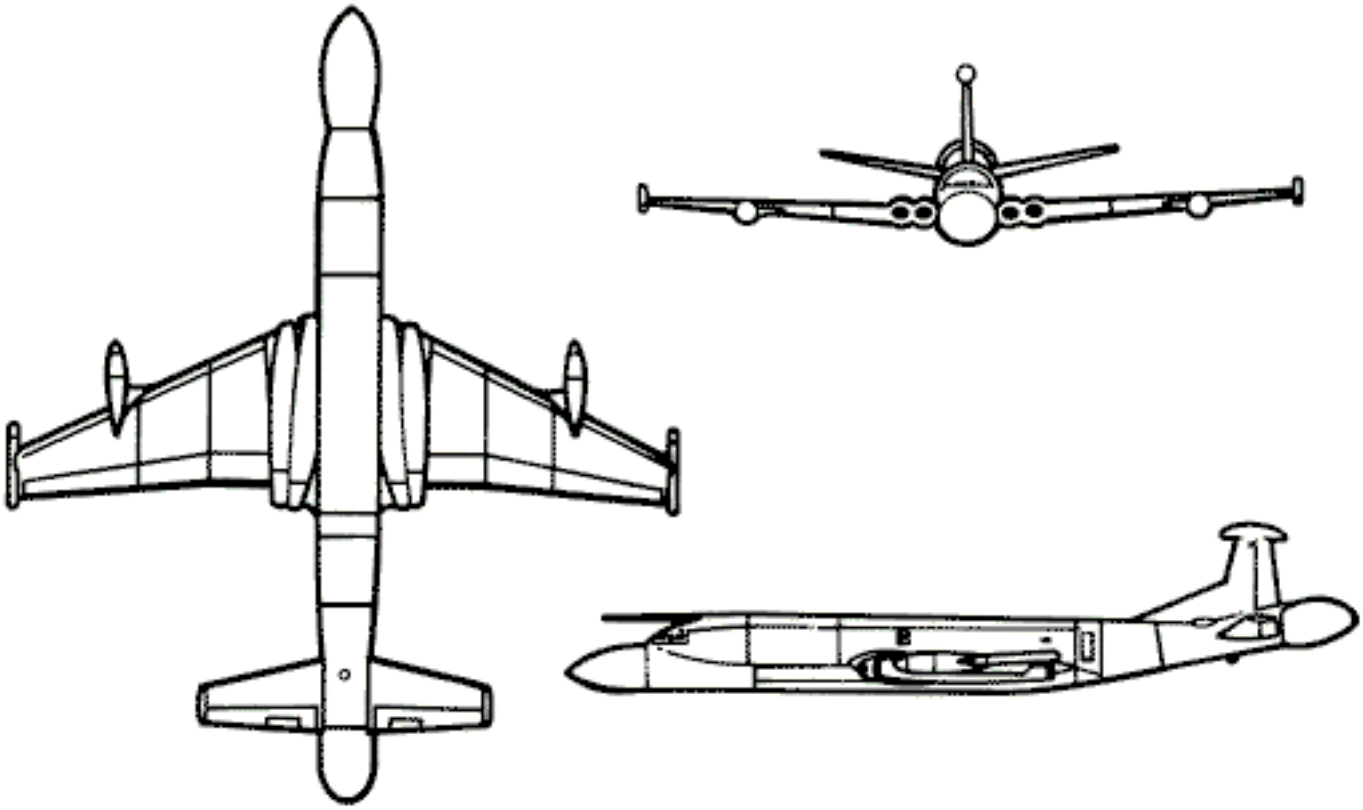
WEFT DESCRIPTION

Wings. Low-mounted and unequally tapered with blunt tips and positive slant.
Engine(s). Four turboprops mounted in the wings and extending forward of the wings.
Fuselage. Round, cigar-shaped tapered at the rear and a rounded nose. Stepped-up cockpit. Bulges on sides of fuselage aft of the cockpit. Pod carried on the fuselage bottom is a SLAR.
Tail. Back-tapered fin with square tip. Equally tapered flats, mid-mounted on the fuselage.

USER COUNTRIES

Afghanistan (Il-18), CIS.

NIMROD AEW3 (BAe)



GENERAL DATA

Country of Origin. UK.
Similar Aircraft. Nimrod, P-3C Orion.
Crew. Twelve.
Role. Surveillance, ASW.
Armament. None.
Dimensions. Length: 126 ft, 7 in (38.6 m). Span: 114 ft, 8 in (35 m).

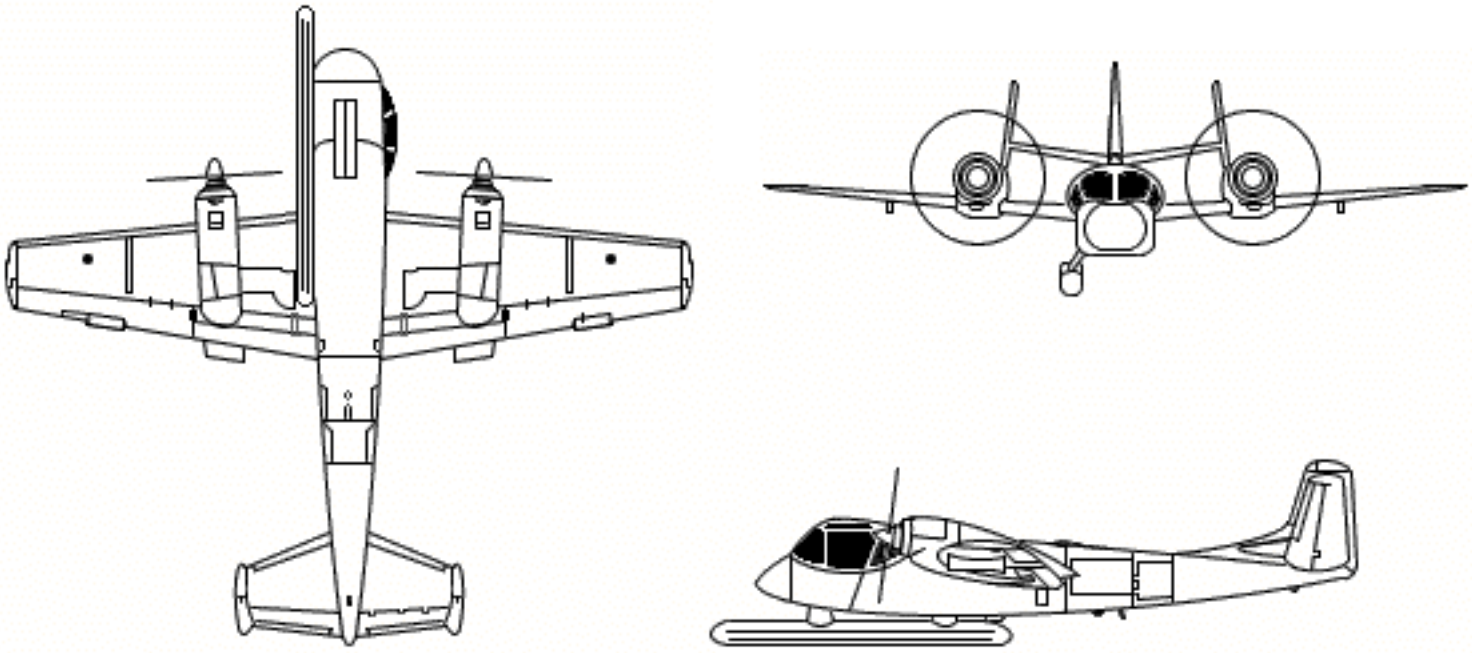
WEFT DESCRIPTION

Wings. Low-mounted, swept-back, and tapered with blunt tips. Wide wing roots. External fuel tanks in wings extend beyond the wings' leading edges.
Engine(s). Four turbojets mounted in the wing roots. Oval air intakes. Exhausts are to the rear of the trailing edges of the wings.
Fuselage. Cigar-shaped with rounded nose and and tapered rear section. Rounded tail boom. Stepped cockpit.
Tail. Fin is equally tapered with an ECM pod mounted at the top. Large angular fairing. Flats are high-mounted on the fuselage and back-tapered with a positive slant.

USER COUNTRY

UK.

OV-1 MOHAWK (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. S-2 Tracker, OV-10 Bronco, An-2 Colt.
Crew. Two.
Role. Battlefield surveillance.
Armament. Normally unarmed (capable of carrying minigun, bombs, and rockets).
Dimensions. Length: 41 ft (12.5 m). Span: 48 ft (14.64 m).

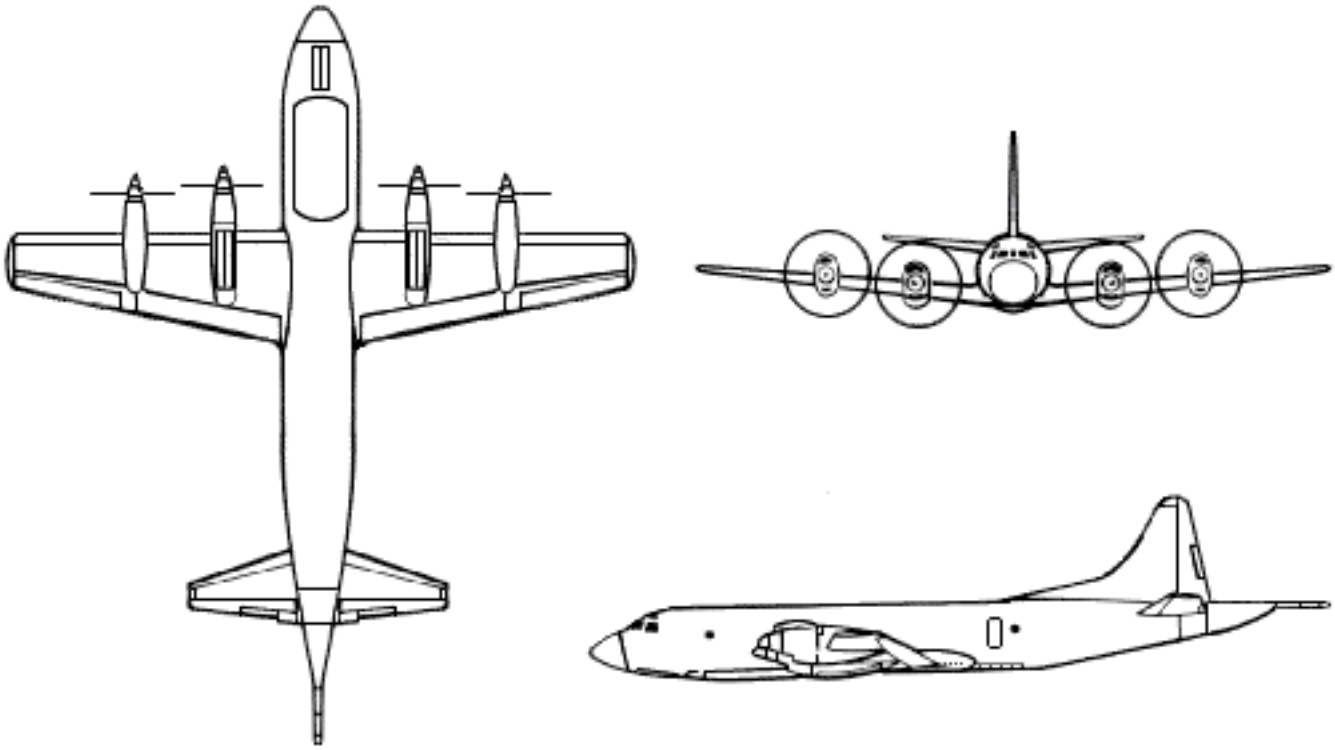
WEFT DESCRIPTION

Wings. Mid-mounted and equally tapered with blunt tips. Positive slant.
Engine(s). Two turboprops mounted on top of and extending beyond wings' leading edges.
Fuselage. Club-shaped and tapered to rear section. Blunt nose. Two-seat, stepped-up cockpit. When installed, SLAR is prominently exposed beneath the right side and forward part of the body.
Tail. Triple fins are equally tapered. Outer fins extend above and below the flat. Center fin appears taller. Flats are tapered with a positive slant.

USER COUNTRY

USA.

P-3C ORION (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. Il-20 Coot, An-24 Coke, C-130 Hercules.
Crew. Ten.
Role. Reconnaissance, ASW.
Armament. Torpedoes, depth charges.
Dimensions. Length: 116 ft, 8 in (35.6 m). Span: 99 ft, 7 in (30.4 m).

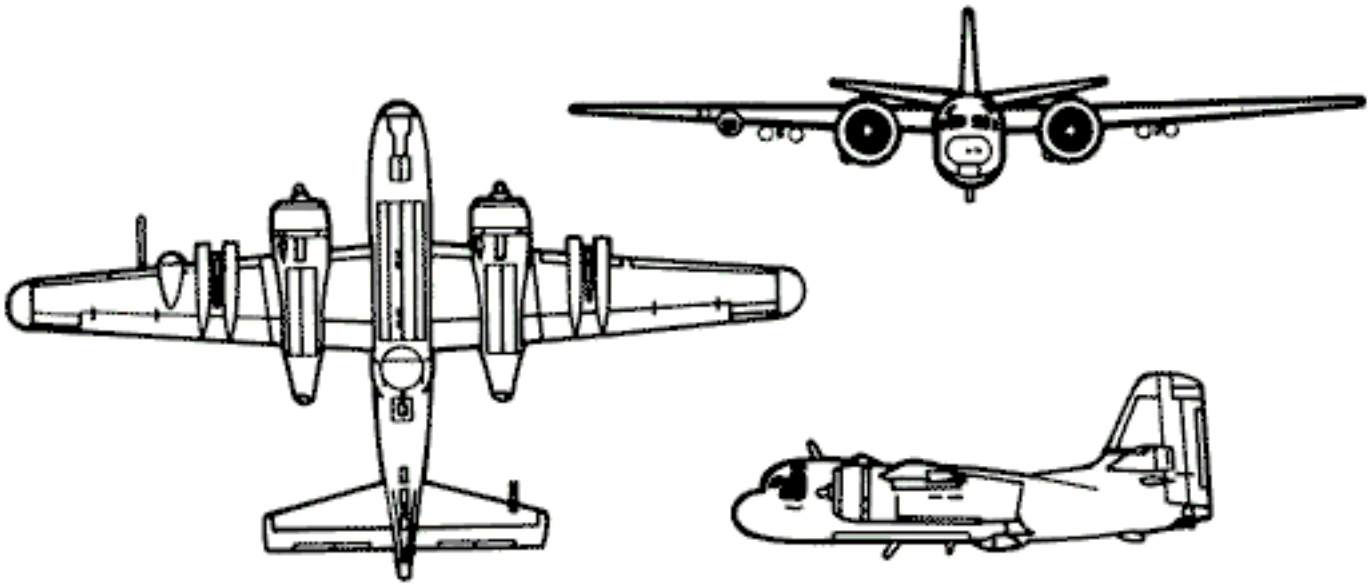
WEFT DESCRIPTION

Wings. Low-mounted and forward tapered with blunt tips. Positive slant.
Engine(s). Four turboprops mounted in the wings. Engine nacelles extend beyond the leading edges of the wings.
Fuselage. Cigar-shaped with rounded nose and stepped-up cockpit. Radar boom mounted on the rear of the tail.
Tail. Fin is rounded and tapered with a curved fairing. Flats are high-mounted on the fuselage, equally tapered, and a positive slant.

USER COUNTRIES

Australia, Canada, Iceland, Iran, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, USA.

S-2 TRACKER (GRUMMAN)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. S-3 Viking, OV-1 Mohawk.
Crew. Four.
Role. Antisubmarine, reconnaissance.
Armament. Torpedoes, depth charges, rockets.
Dimensions. Length: 43 ft, 5 in (13.3 m). Span: 72 ft, 5 in (22.1 m).

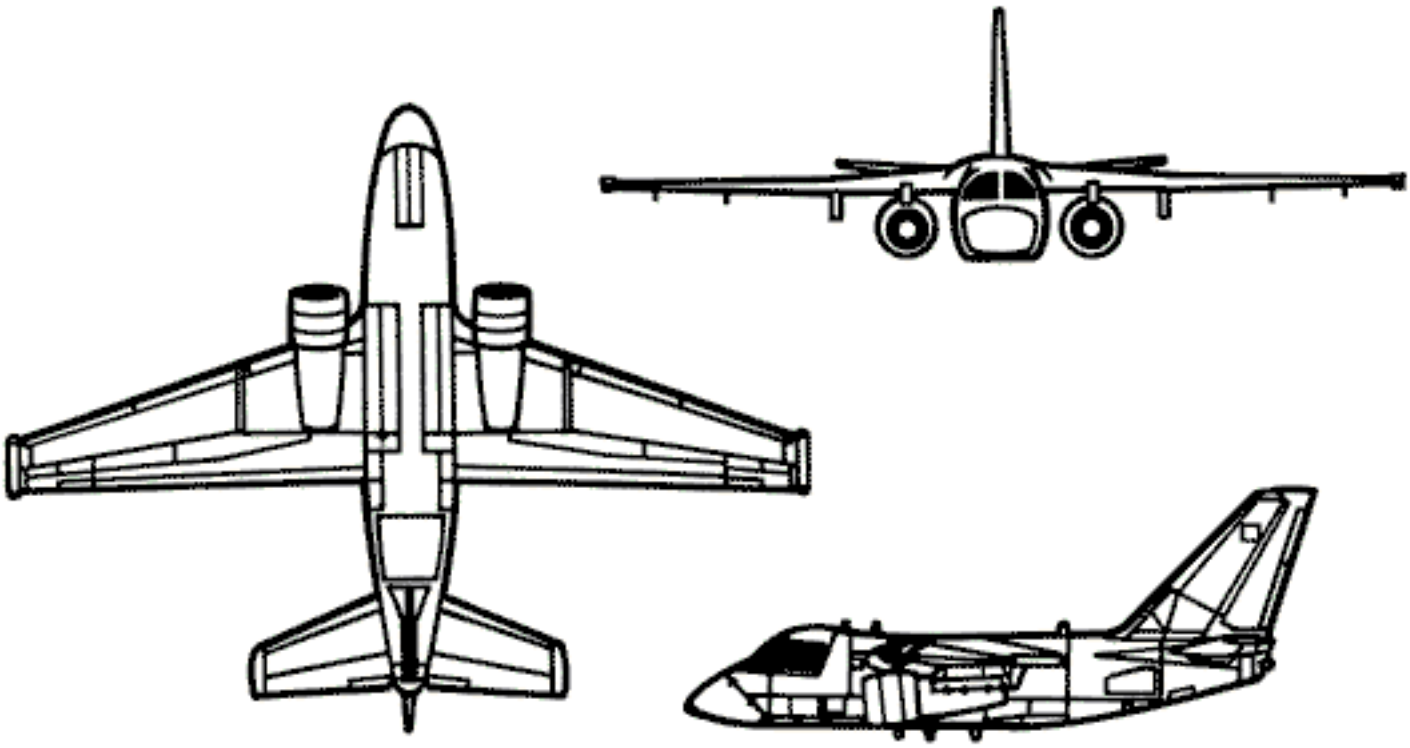
WEFT DESCRIPTION

Wings. High-mounted and equally tapered with rounded tips.
Engine(s). Two turboprops or piston engines mounted in the wings. Engine nacelles extend beyond the leading and trailing edges of the wings.
Fuselage. Oval and club-shaped that tapers to the rear. Rounded nose, stepped-up cockpit, and radome on the belly.
Tail. Fin back-tapered with round tip and a curved fairing. Flats low-mounted on the fin and are back-tapered.

USER COUNTRIES

Argentina, Brazil, Canada, Lebanon, South Korea, Taiwan, Thailand, Turkey, Uruguay, USA, Venezuela.

S-3A VIKING (LOCKHEED)



GENERAL DATA

Country of Origin. USA.
Similar Aircraft. S-2 Tracker.
Crew. Four.
Role. ASW, transport.
Armament. Torpedoes, depth charges, mines.
Dimensions. Length: 53 ft, 3 in (16.2 m). Span: 68 ft, 6 in (20.9 m).

WEFT DESCRIPTION

Wings. High-mounted and back-tapered with electronic pods at the tips.
Engine(s). Two turbofans mounted on pylons under the wings just outboard of the wing roots. Engines extend beyond the leading edges of the wings.
Fuselage. Oval, club-shaped, and tapers to the rear. Rounded nose and a stepped-up cockpit.
Tail. Fin swept-back and tapered with a square tip. Flats are back-tapered with blunt tips, high-mounted on the fuselage, and a positive slant.

USER COUNTRY

USA.

CHAPTER 12

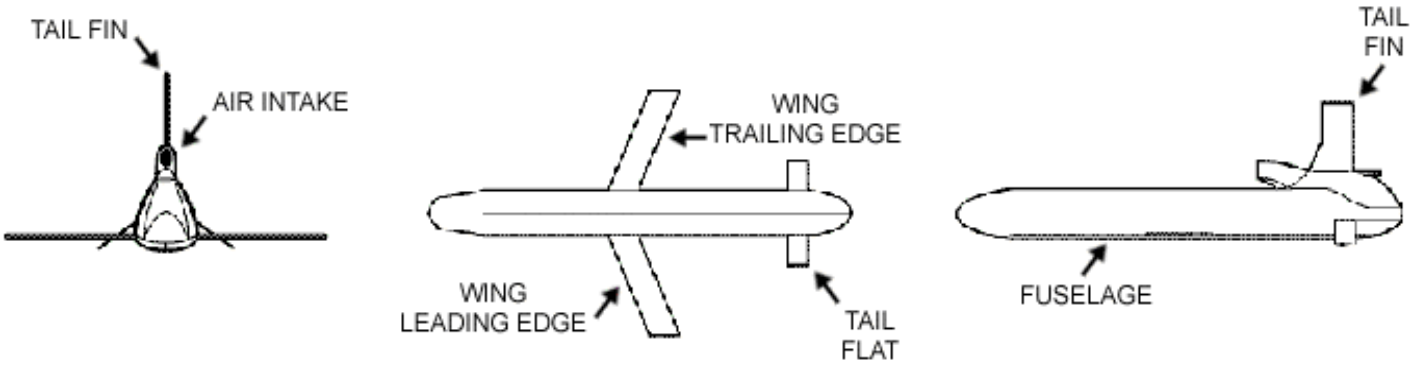
Unmanned Aerial Vehicles and Cruise Missiles

This chapter shows examples of unmanned aerial vehicles (UAVs) and cruise missiles. UAVs will perform a variety of missions; reconnaissance, surveillance, intelligence, targeting, and acquisition (RISTA). Cruise missiles are like artillery, which detonate at proximity, on command, or on impact.

There are many more UAVs than can be listed here. For this manual, UAVs were grouped together based on similarities and roles. One, and in some cases, two, UAVs were selected from each group to be represented in this manual.

For each aircraft, there are line drawings, general data, WEFT descriptions, user countries, photographs, and aircraft manufacturer information. The following illustration shows early warning, observation, and reconnaissance aircraft WEFT description features. Line drawings are not to scale.

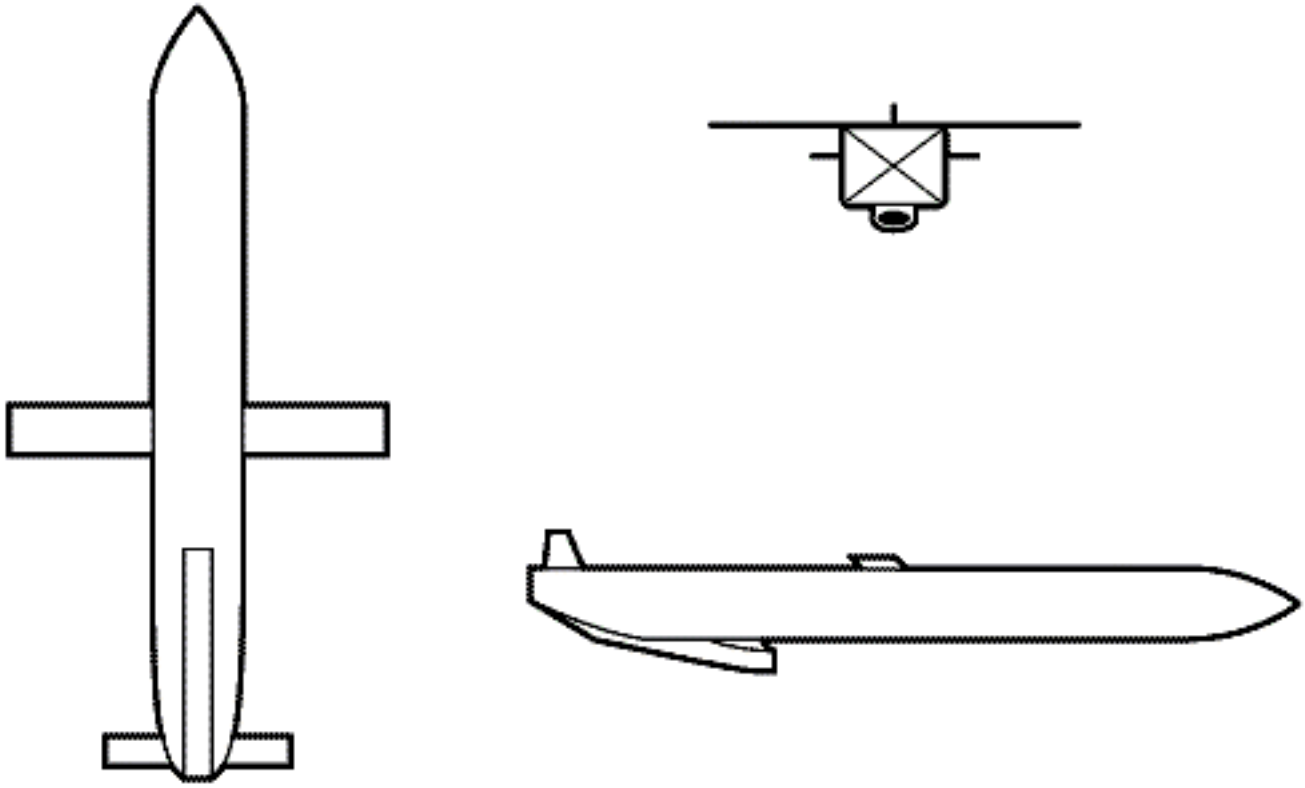
WEFT DESCRIPTION FEATURES



Chapter 12 Aircraft List

Apache CWS	D-4 NPU	Pioneer
AS-4 Kitchen	DR-3 Reys	Predator
AS-15 Kent	Model 324	Raven
Banshee BTT-3	Model 410	Scout
Brevel	Mirach 26	Shmel-1 Yak-061
BQM-34 Firebee II	Mirach 100	Taifun
C-101	MK-105 Flash	Tomahawk AGM-86
Crecerelle	MK-106 HIT	.

APACHE CWS (MATRA)



GENERAL DATA

Country of Origin. France.
Similar Aerial Platform. Tomahawk, AGM-86.
Role. Cruise, air-to-ground attack.
Armament. Submunitions and HE warhead.
Dimensions. Length: 16 ft, 4 in (5.01 m). Span: 8 ft, 3 in (2.53 m).

WEFT DESCRIPTION

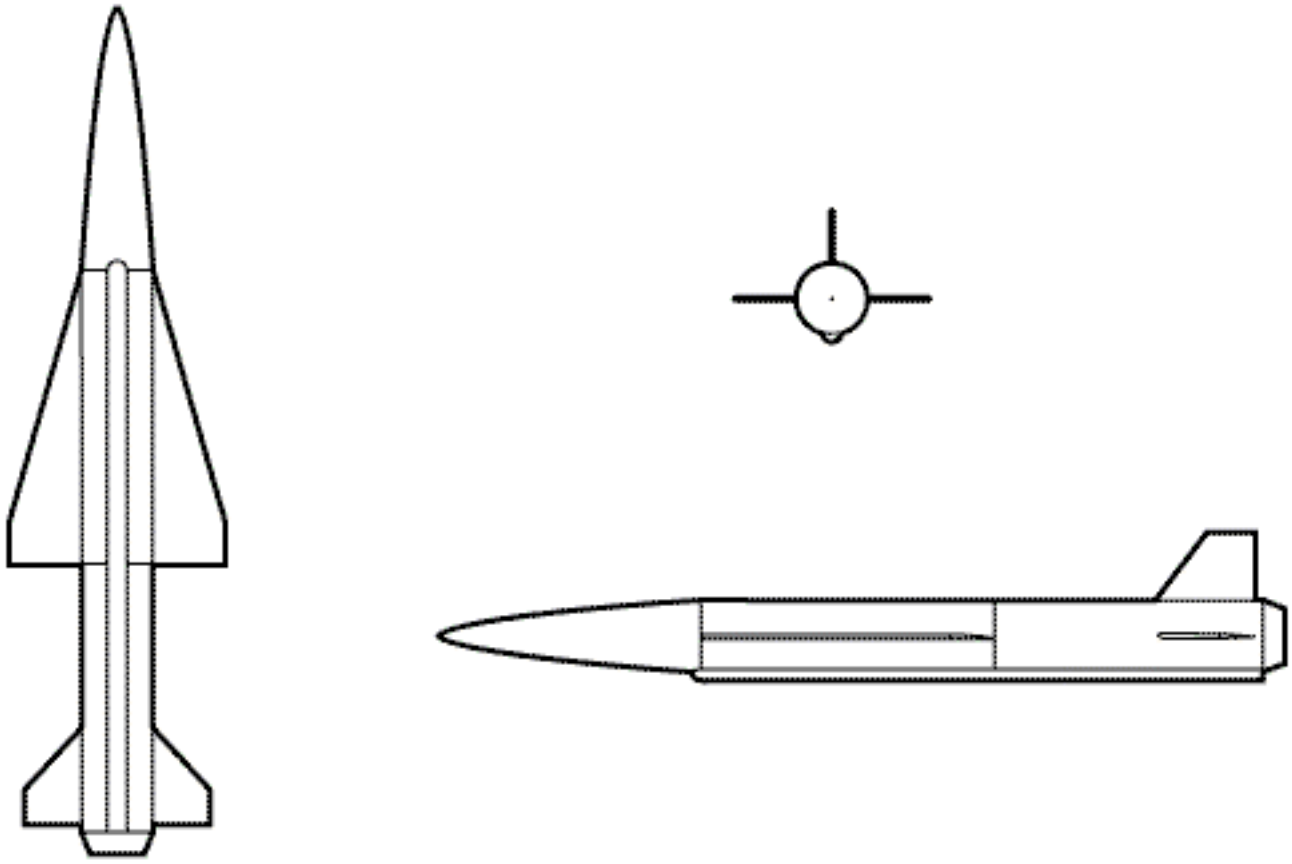
Wings. High-mounted on body, straight with square tips, and a slight negative slant.

Engine(s). Single turbojet mounted in rear of fuselage. Air intake in scoop beneath the rear section. Round exhaust in rear.
Fuselage. Round, tapers to a pointed nose and a blunt rear. Radar in nose is not visible.
Tail. Fin unequally tapered with square tip. Flats mid- to high-mounted on the fuselage, straight with square tips.

USER COUNTRY

France.

AS-4 KITCHEN (CIS)



GENERAL DATA

Country of Origin. CIS.
Similar Aerial Platform. DR-3.
Role. Long-range, radar-guided, air-to surface missile.
Armament. 350-kt nuclear or 1000-kg HE.
Dimensions. Length: 37 ft (11.3 m). Span: 9 ft, 8 in (3 m).

WEFT DESCRIPTION

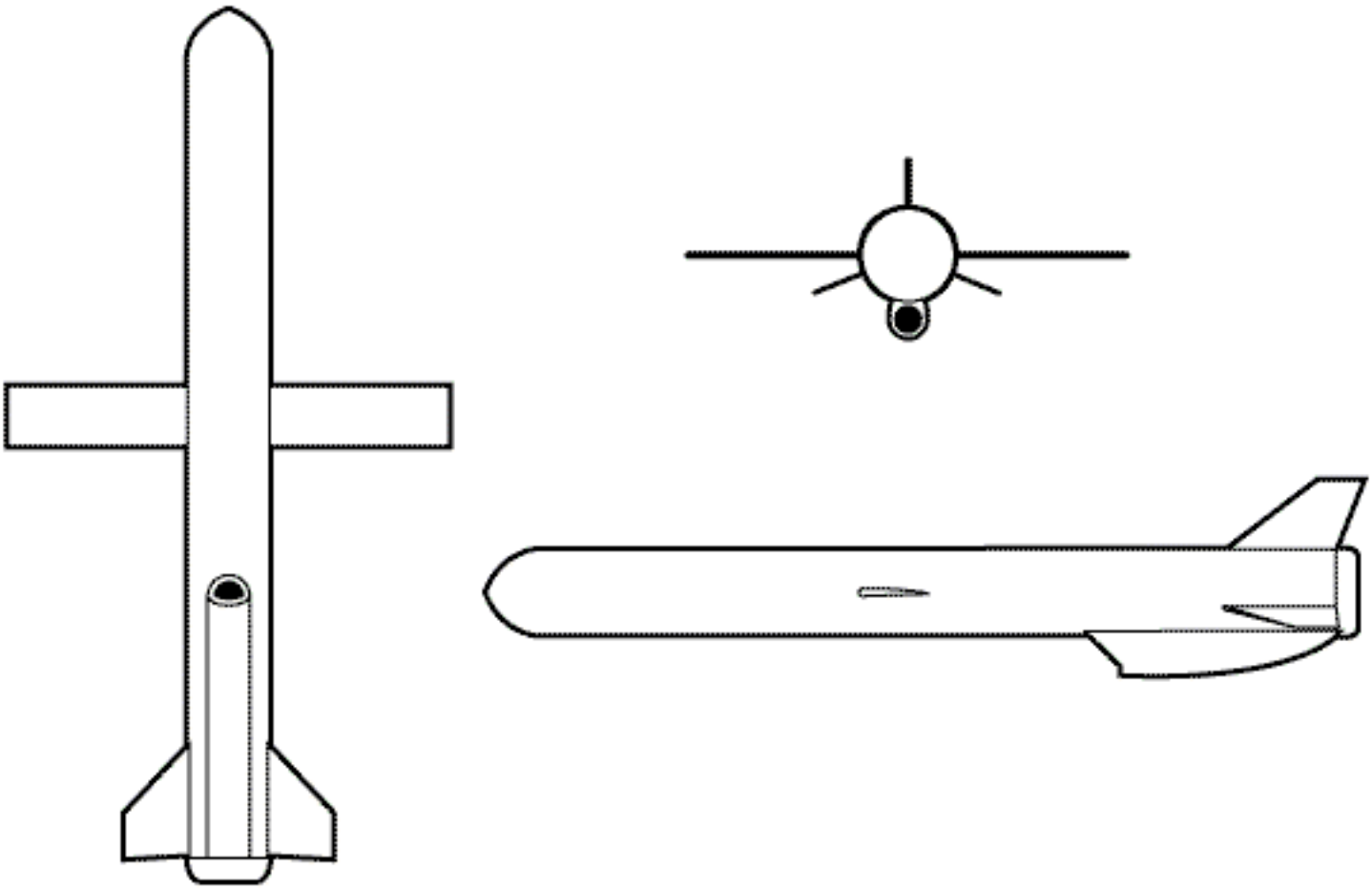
Wings. Mid-mounted, delta-shaped wings with square tips.

Engine(s). Liquid propellent with exhaust in the rear.
Fuselage. Long, round, slender body that tapers to a pointed nose. Fairing on the belly. Blunt rear.
Tail. Flats mid-mounted on body, delta-shaped with square tips. Fin back-tapered with a square tip.

USER COUNTRY

CIS.

AS-15 KENT (CIS)



GENERAL DATA

Country of Origin. CIS.
Similar Aerial Platform. AS-4 Kitchen.
Role. Air launched cruise missile (ALCM).
Armament. 200-kt nuclear.
Dimensions. Length: 19 ft, 6 in (6 m). Span: 10 ft, 1 in (3.1 m).

WEFT DESCRIPTION

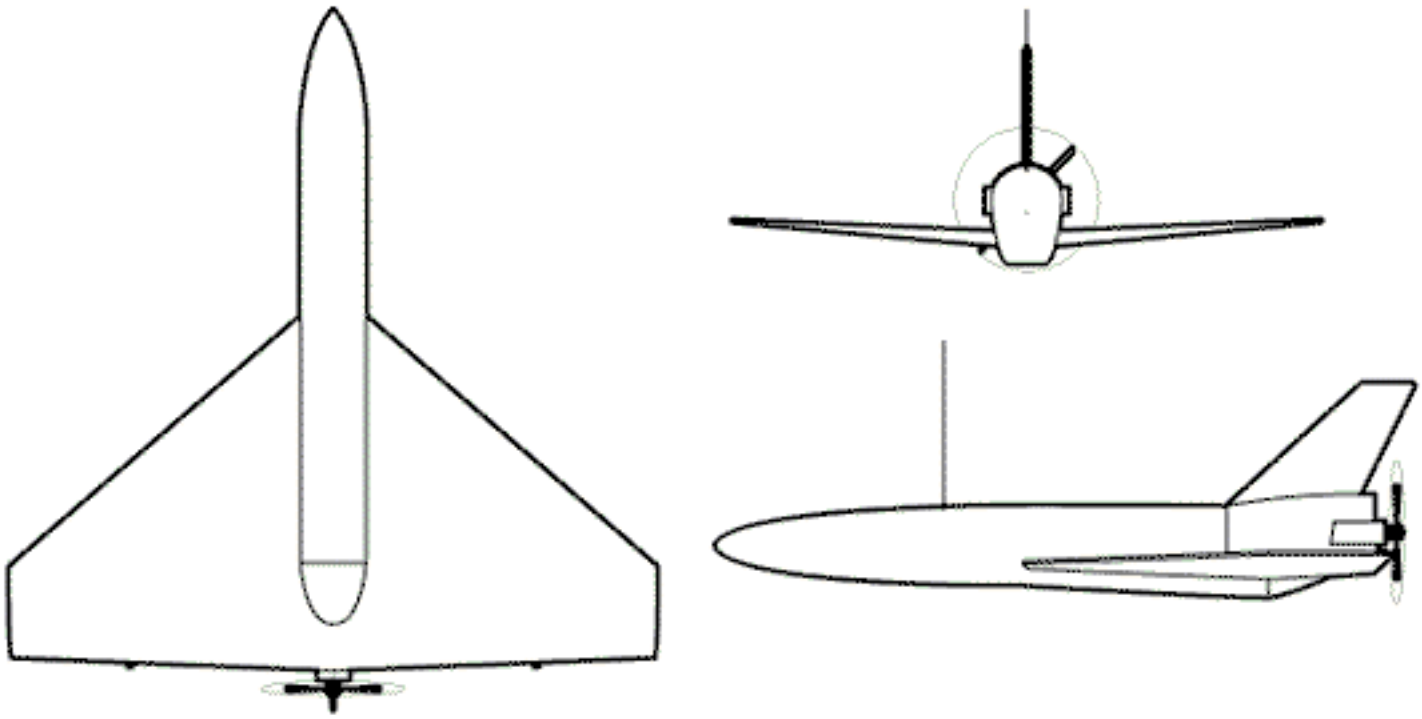
Wings. Mid-mounted on body, straight with square tips.

Engine(s). Single turbofan in rear body. Round air intake. Round exhaust.
Fuselage. Long, round, rounded nose and blunt rear section.
Tail. Flats mid-mounted and back-tapered. Fin is swept-back and tapered.

USER COUNTRY

CIS.

BANSHEE BTT-3 (MEGGITT AEROSPACE)



GENERAL DATA

Country of Origin. UK.
Similar Aerial Platform. Crecerelle, DR-3.
Role. Target drone, reconnaissance.
Armament. None.
Dimensions. Length: 9 ft, 6 in (2.95 m). Span: 8 ft, 1 in (2.49 m).

WEFT DESCRIPTION

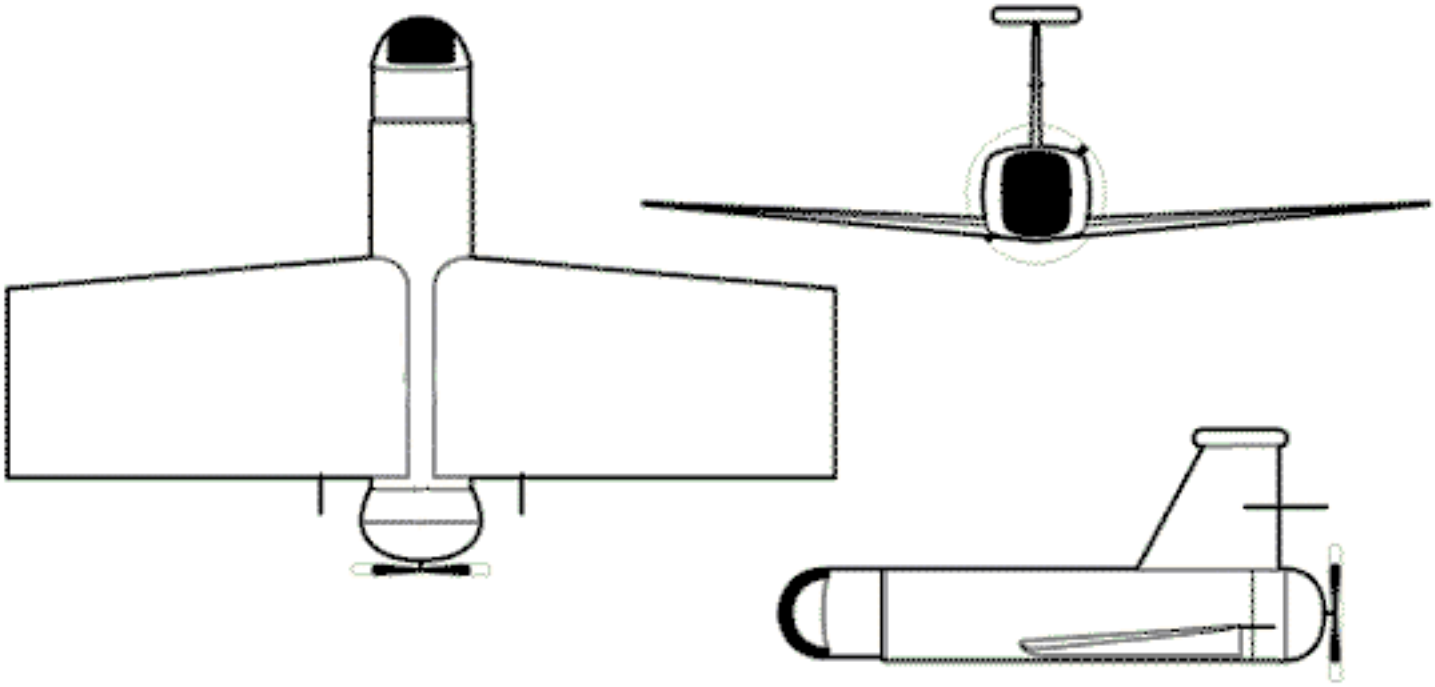
Wings. Low-mounted and delta-shaped. Wings have a positive slant.

Engine(s). Single jet in rear. Single exhaust. May have prop-driven engine with prop at the rear in the opposing position.
Fuselage. Round and tapers to the front. Blunt rear with jet engine, and a cone with rotary engine.
Tail. Tall, swept-back fin. No flats.

USER COUNTRIES

UK and over 20 other countries.

BREVEL (MATRA, MBB)



GENERAL DATA

Country of Origin. France, Germany.
Similar Aerial Platform. Taifun.
Role. Recon, target locate/designate, and image assessment.
Armament. None.
Dimensions. Length: 7 ft, 5 in (2.3 m). Span: 11 ft, 1 in (3.4 m).

WEFT DESCRIPTION

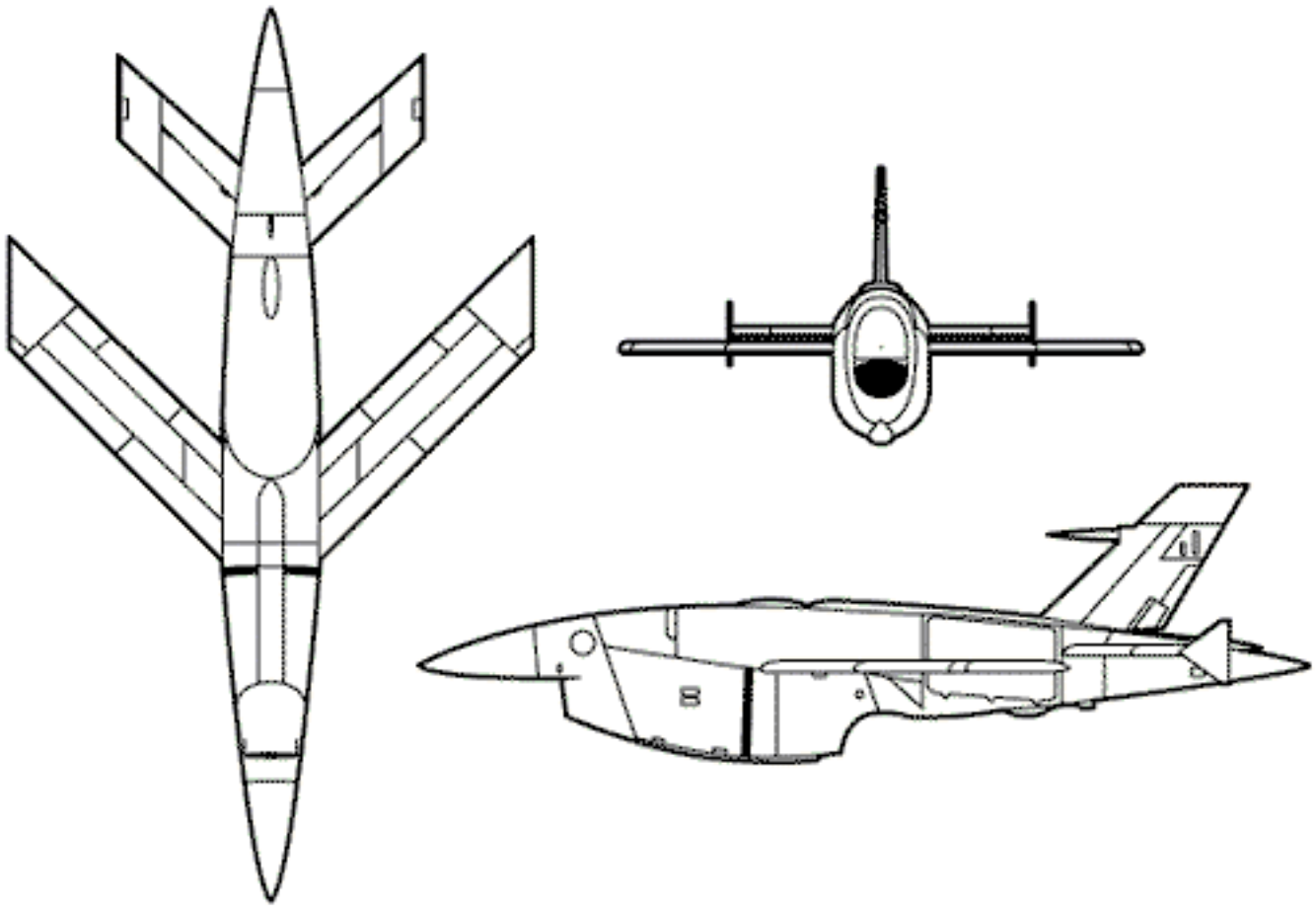
Wings. Low-mounted, back-tapered leading and straight trailing edges with positive slant.

Engine(s). One piston engine mounted on rear of fuselage in the opposing position.
Fuselage. Round body. Rounded, glassed-in nose section.
Tail. Back-tapered fin. Small, round radar dish on top. No flats.

USER COUNTRIES

France, Germany.

BQM-34 FIREBEE II (TELEDYNE RYAN)



GENERAL DATA

Country of Origin. USA.
Similar Aerial Platform. D-3, I 24 I.
Role. Reconnaissance, target.
Armament. Usually none.
Dimensions. Length: 22 ft, 10 in (6.98 m). Span: 12 ft, 10 in (3.93 m).

WEFT DESCRIPTION

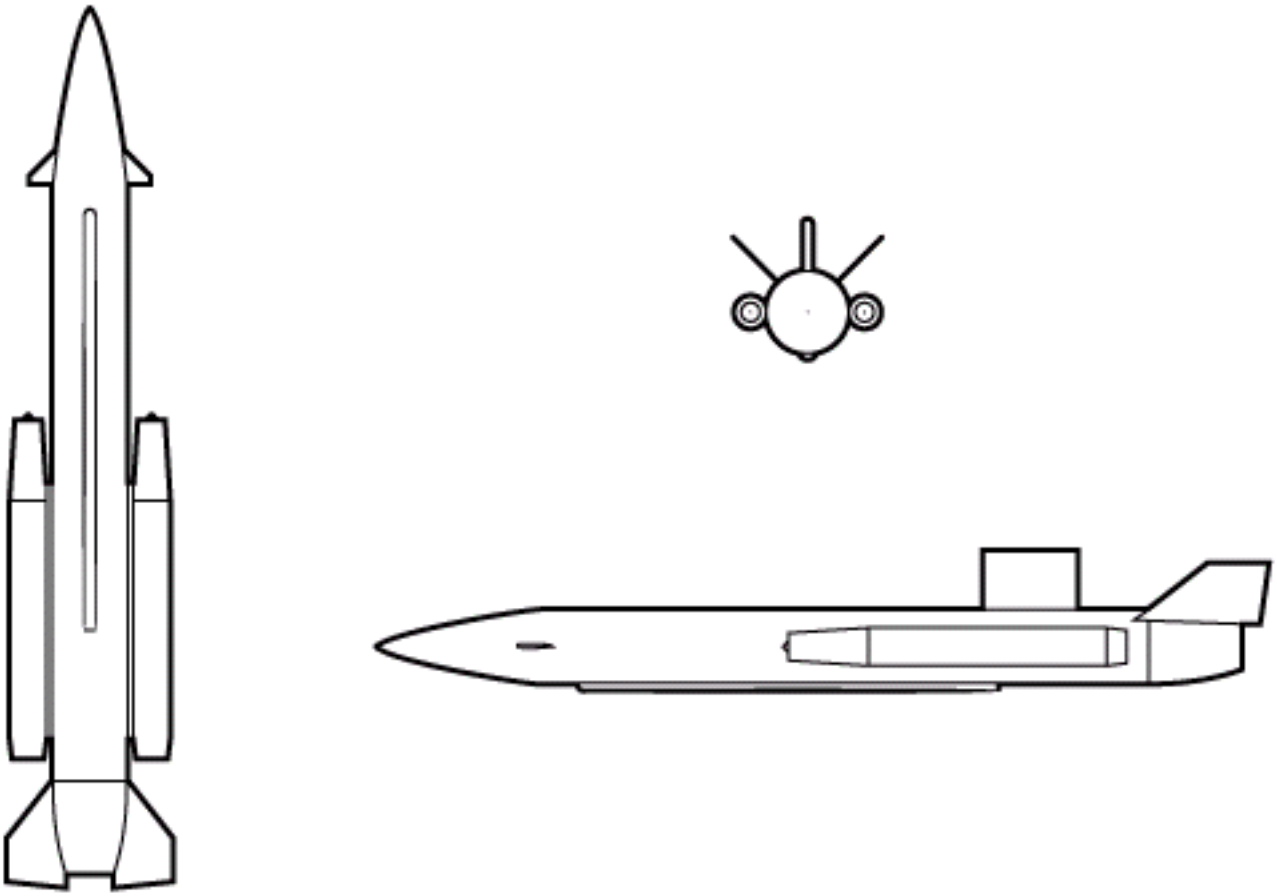
Wings. Mid-mounted, swept-back, and untapered with angular tips.

Engine(s). Bulging jet on belly. Oval intake and round exhaust.
Fuselage. Round, tapered front and rear. Pointed nose and tail cone. Belly fin.
Tail. Flats high-mounted, swept-back, and untapered. Fin swept-back and tapered.

USER COUNTRIES

China, Iran, Israel, USA.

C-101 (CPMIEC)



GENERAL DATA

Country of Origin. China.
Similar Aerial Platform. AS-15 Kent.
Role. Medium-range, air-to-surface cruise missile.
Armament. 400-kg warhead.
Dimensions. Length: 19 ft (5.8 m). Span: 3 ft, 9 in (1.2 m).

WEFT DESCRIPTION

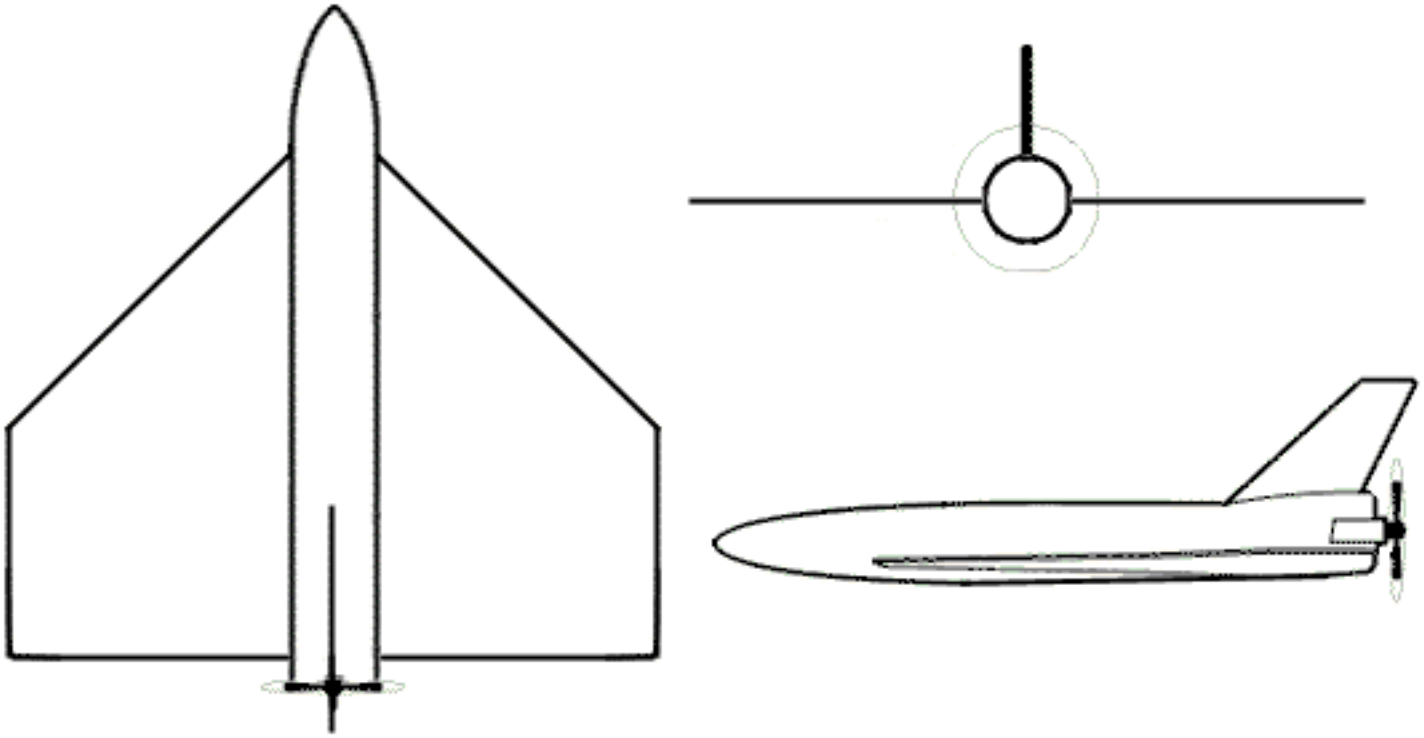
Wings. Similar to canards, they are mid-mounted on the body near the nose section.

Engine(s). Side-mounted ramjet mid-mounted on the body. Small round intakes and large round exhausts.
Fuselage. Long, round, and tapers to nose cone. Blunt rear. Launch rail on bottom.
Tail. V-mounted, back-tapered tail flats. Square tail fin forward of tail flats.

USER COUNTRY

China.

CRECERELLE (TARGET TECHNOLOGY)



GENERAL DATA

Country of Origin. UK, France.
Similar Aerial Platform. Banshee, ASR-4 Spectre.
Crew. None.
Role. RISTA UAV. Armament. Usually none.
Dimensions. Length: 8 ft 8 in (2.7 m). Span: 10 ft 8 in (3.3 m).

WEFT DESCRIPTION

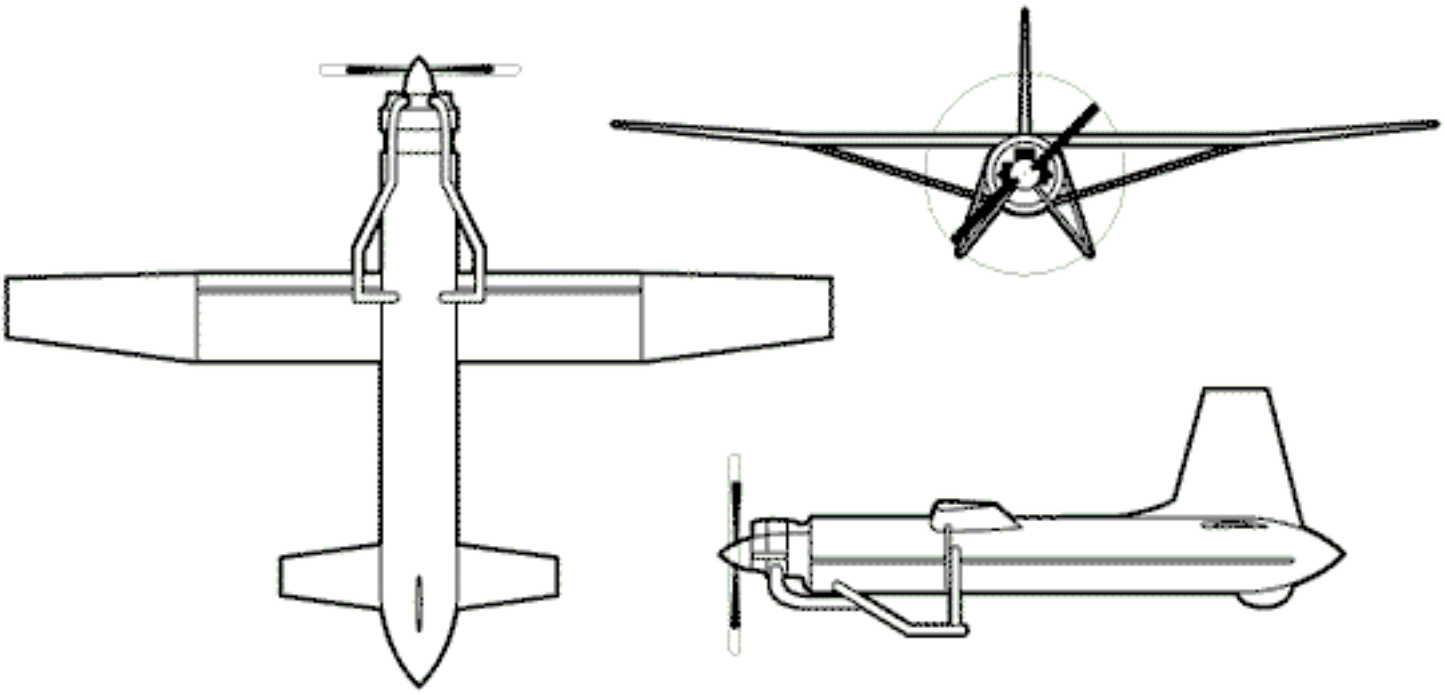
Wings. Low-mounted, delta-shaped with large, square tips.

Engine(s). Twin-cylinder, two-cycle. Two-bladed propeller in the opposing position.
Fuselage. Round, tapers to a round nose. Blunt rear.
Tail. Swept-back and tapered tail fin with a square tip. No flats.

USER COUNTRIES

France, Netherlands, United Kingdom.

D-4 NPU (XIAN NPU)



GENERAL DATA

Country of Origin. China.
Similar Aerial Platform. MK-105 Flash. Predator.
Role. Multirole, reconnaissance, surveillance and target.
Armament. None.
Dimensions. Length: 10 ft, 8 in (3.32 m). Span: 14 ft, 10 in (4.30 m).

WEFT DESCRIPTION

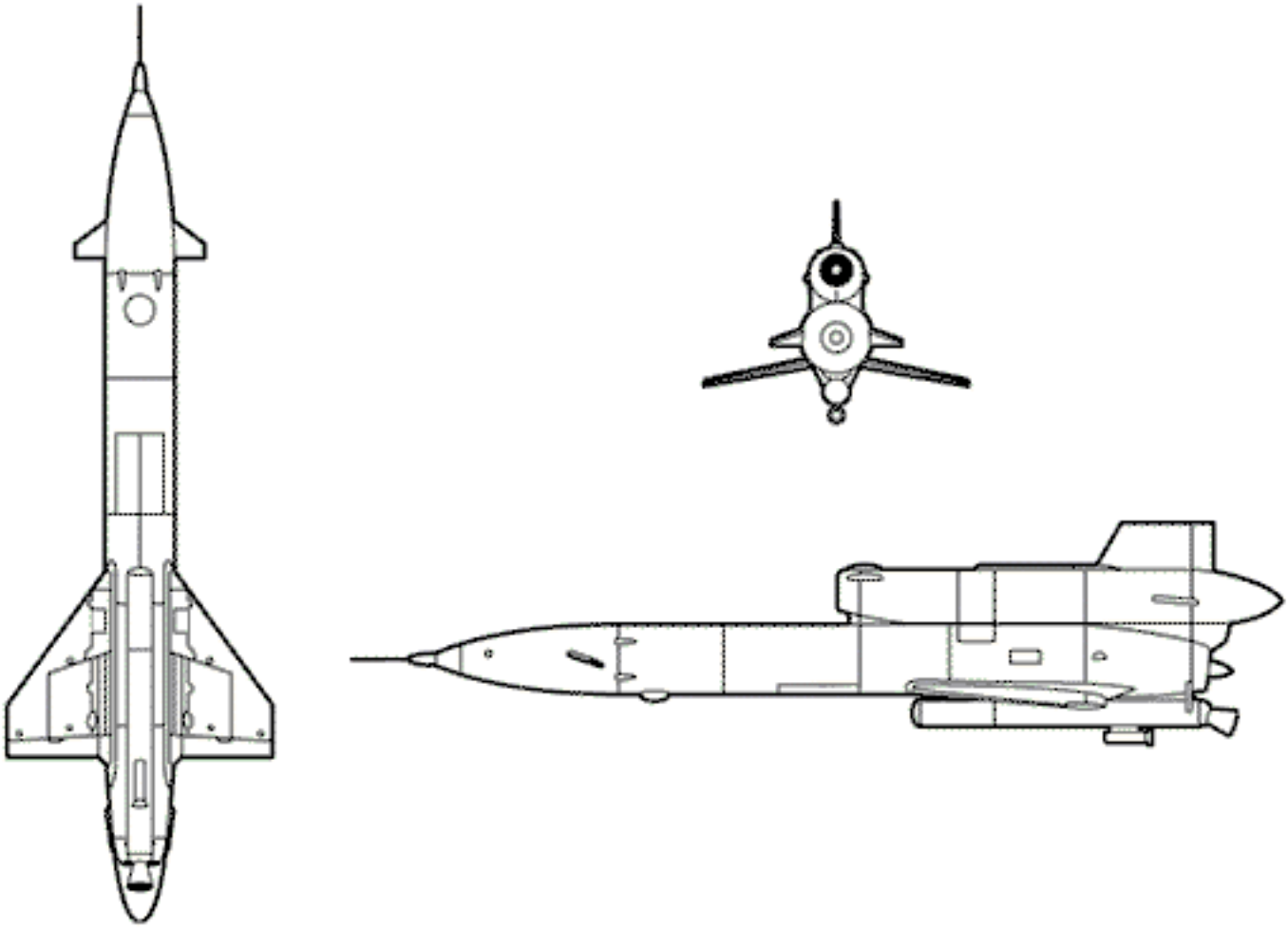
Wings. High-mounted, straight to the midsection, tapered from midwing to tips.

Engine(s). Single, prop-driven engine in the nose section.
Fuselage. Round and tapers to front and rear. Fixed landing pads.
Tail. Flats high-mounted on body and equally tapered. Fin is equally tapered.

USER COUNTRIES

China and exported.

DR-3 REYS (TUPOLEV)



GENERAL DATA

Country of Origin. CIS.
Similar Aerial Platform. DR-5, Banshee, Crecerelle.
Role. Tactical reconnaissance UAV.
Armament. None.
Dimensions. Length: 23 ft (7.3 m). Span: 9 ft 10 in (3 m).

WEFT DESCRIPTION

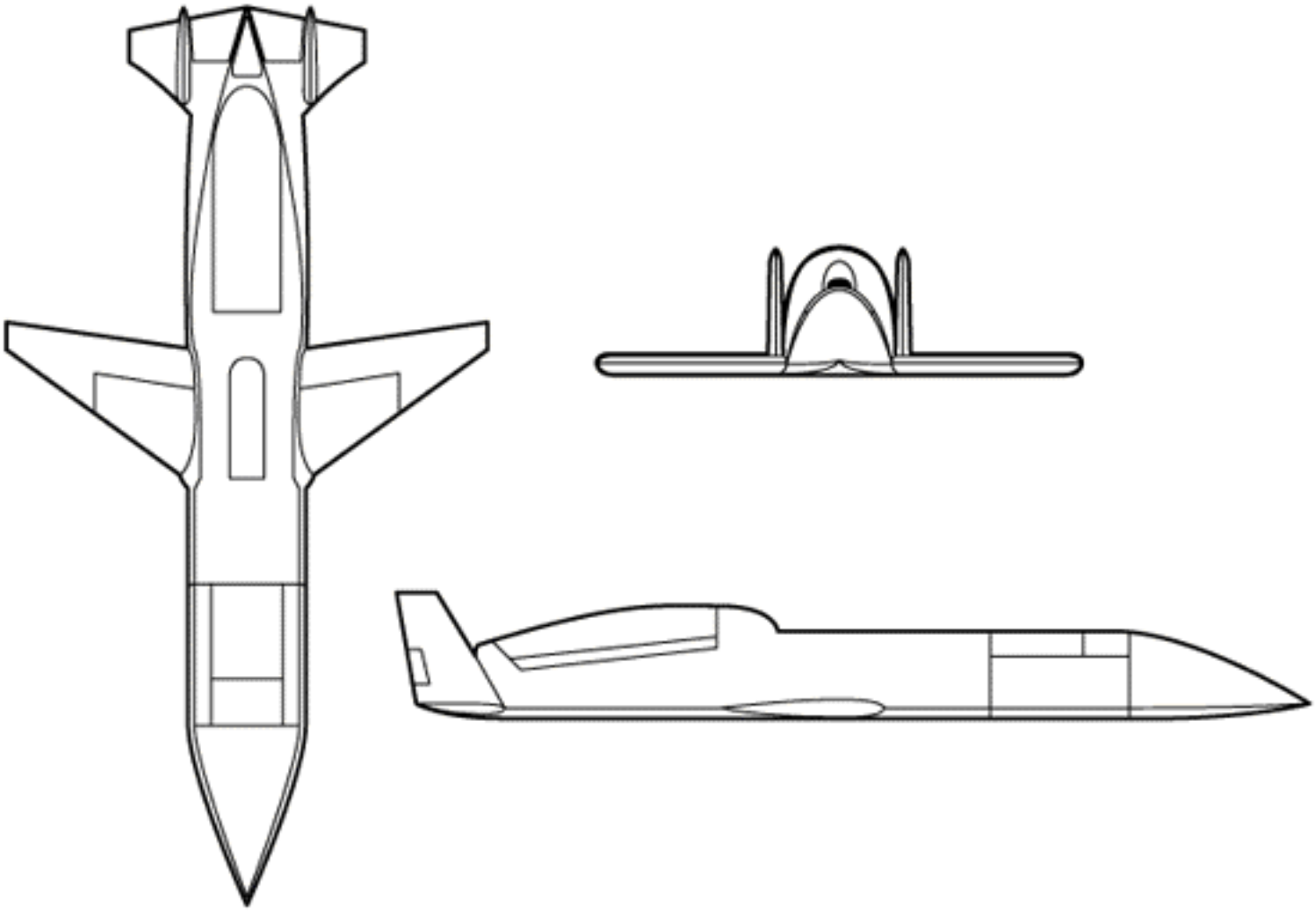
Wings. Low-mounted and delta-shaped with square tips. Small, swept-back canards.

Engine(s). Large, jet on top rear of fuselage. Large air intake.
Fuselage. Long, slender, tapers to the front, blunt rear. Pitot tube.
Tail. Short, swept-back fin on top of engine. Tail cone.

USER COUNTRY

CIS.

MODEL 324 (TELEDYNE RYAN)



GENERAL DATA

Country of Origin. USA.
Similar Aerial Platforms. C-101.
Role. Day and night reconnaissance.
Armament. None.
Dimensions. Length: 20 ft, 1 in (6.12 m). Span: 11 ft (3.35 m).

WEFT DESCRIPTION

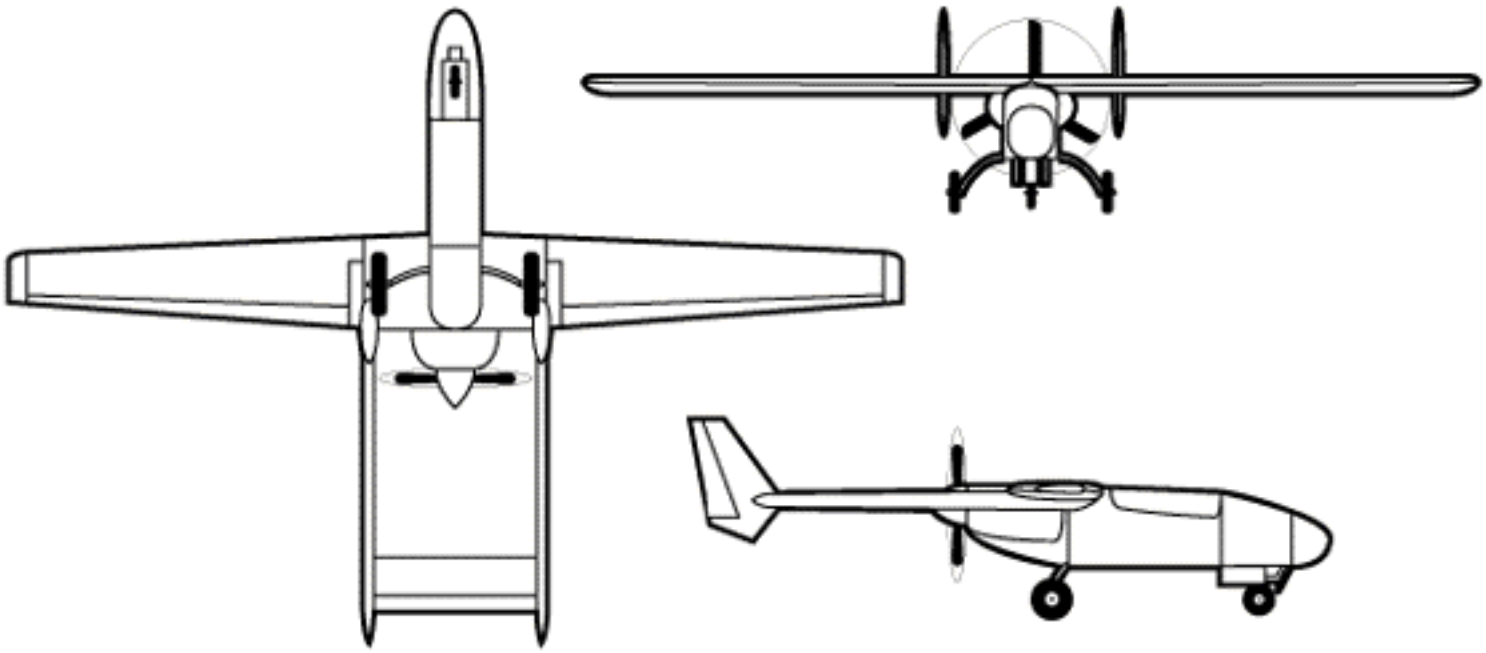
Wings. Low-mounted, swept-back, and tapered.

Engine(s). Turbojet hidden in aft belly compartment until launch.
Fuselage. Flat-bottomed. Pointed nose and hump on aft top of craft.
Tail. Two swept-back and tapered fins mounted on unequally tapered flats.

USER COUNTRY

USA.

MODEL 410 (TELEDYNE RYAN)



GENERAL DATA

Country of Origin. USA.
Similar Aerial Platforms. Pioneer, Scout, MK-105 Flash.
Role. Reconnaissance, EW.
Armament. None.
Dimensions. Length: 21 ft, 6 in (6.60 m). Span: 31 ft, 3 in (9.55 m).

WEFT DESCRIPTION

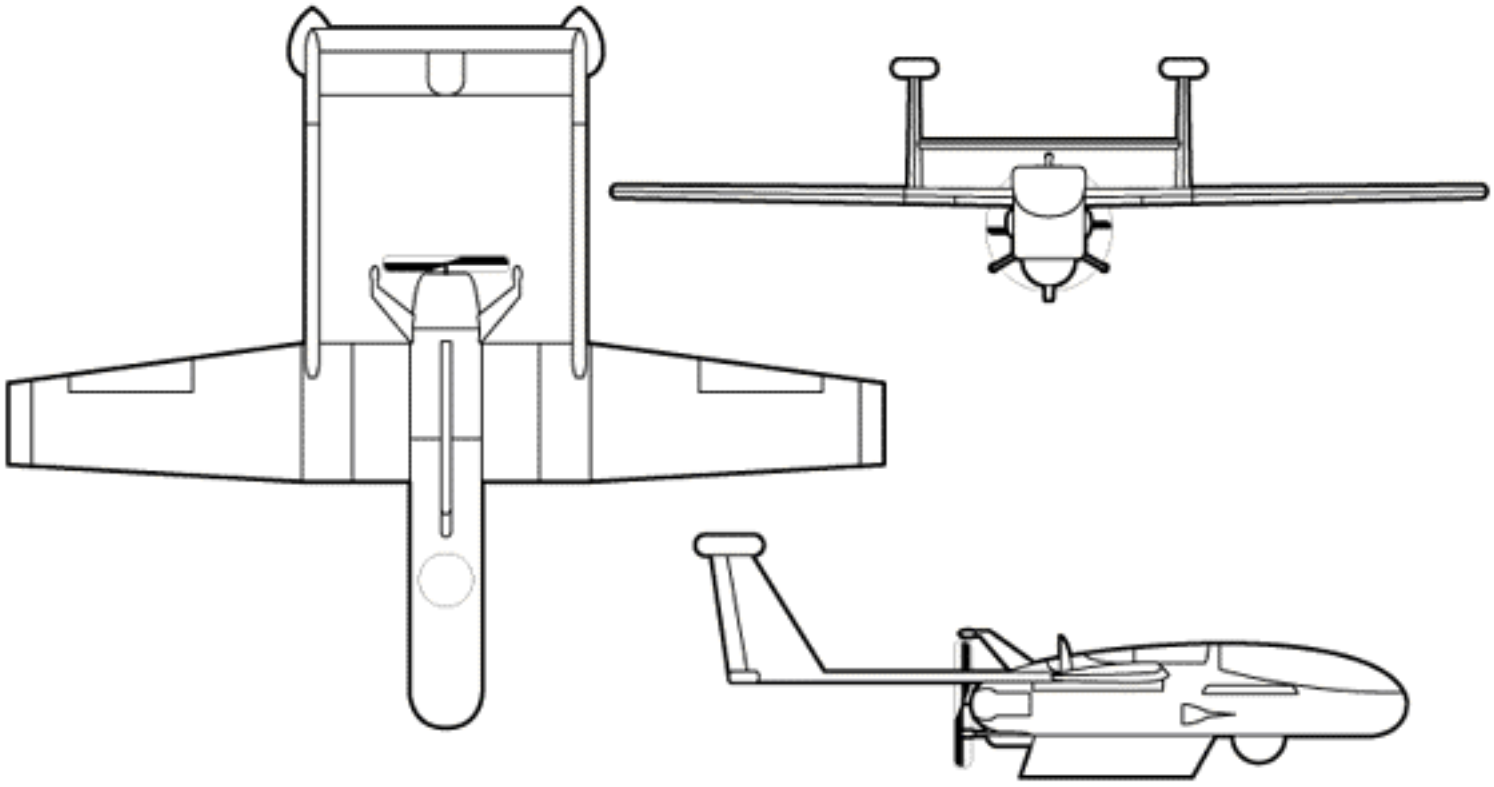
Wings. High-mounted, tapered with a blunt tip.

Engine(s). Four-cylinder turbo on rear of fuselage in the opposing position.
Fuselage. Round and tapers to the front and rear. Flat bottom. Fixed landing gear.
Tail. Tapered back fins mounted on booms. Rectangular flat between fins.

USER COUNTRY

USA.

MIRACH 26 (ALENIA)



GENERAL DATA

Country of Origin. Italy.
Similar Aerial Platform. MK-105 Flash, Shaheen, Mastiff, Ranger.
Role. Close-range tactical mini-UAV.
Armament. None.
Dimensions. Length: 12 ft, 6 in (3.85 m). Span: 15 ft, 5 in (4.73 m).

WEFT DESCRIPTION

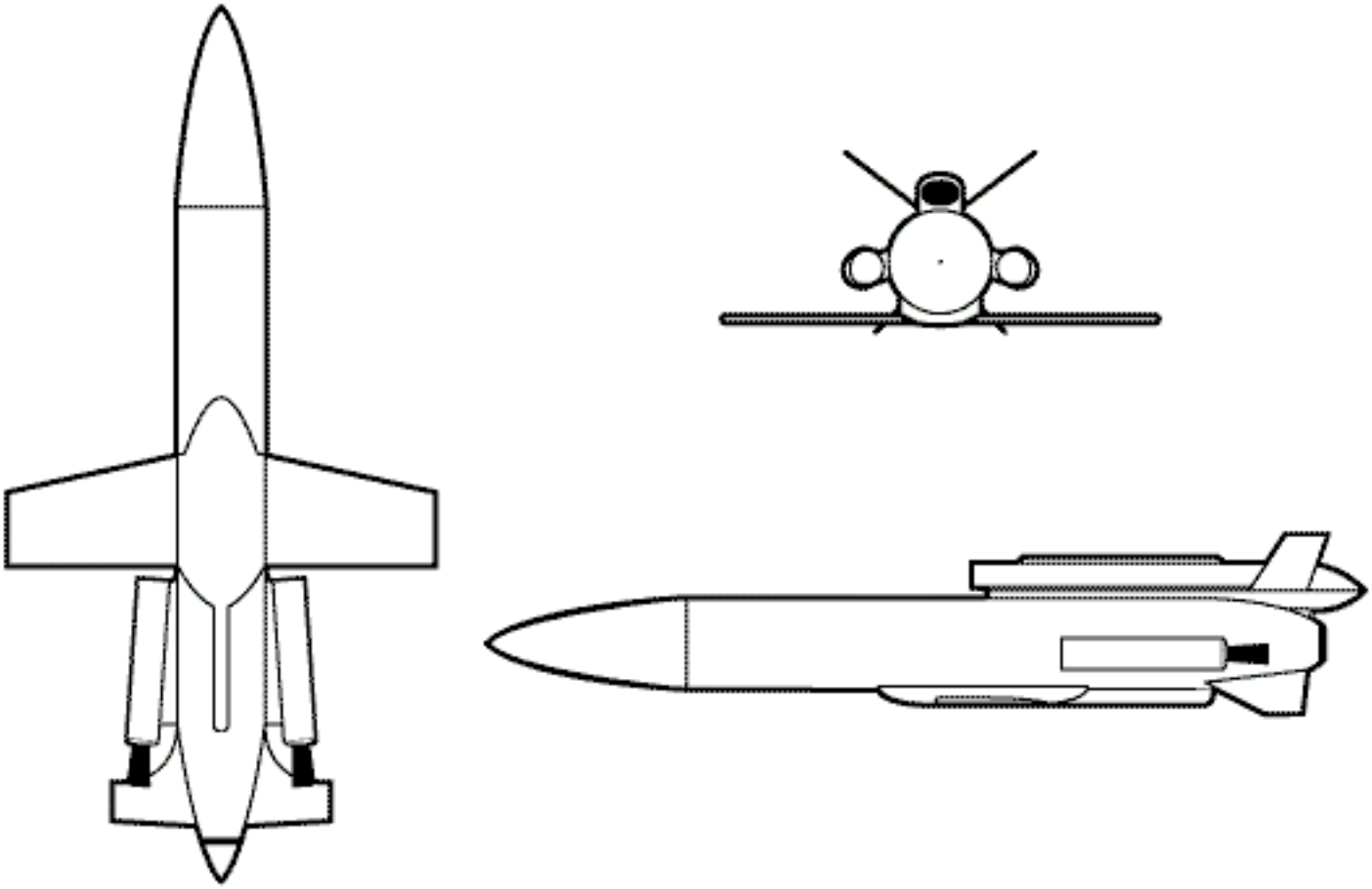
Wings. High-mounted, straight to midwing, and tapered to square tips.

Engine(s). Small piston engine mounted on the rear of the body in the opposing position.
Fuselage. Rounded, with curved spine. Long, wide belly fins. Sensors.
Tail. Thin tail booms to tall, swept-back fins. Rectangular flat between fins.

USER COUNTRY

Italy.

MIRACH 100 (METEOR)



GENERAL DATA

Country of Origin. Italy, Iraq, Libya.
Similar Aerial Platform. Mirach 150, MQ-2 Bigua, C.22, Marakub 100 (Iraq).
Role. Target drone, tactical cruise.
Armament. HE warhead on cruise.
Dimensions. Length: 13, ft 5 in (4.126 m). Span: 5 ft, 9 in (1.804 m).

WEFT DESCRIPTION

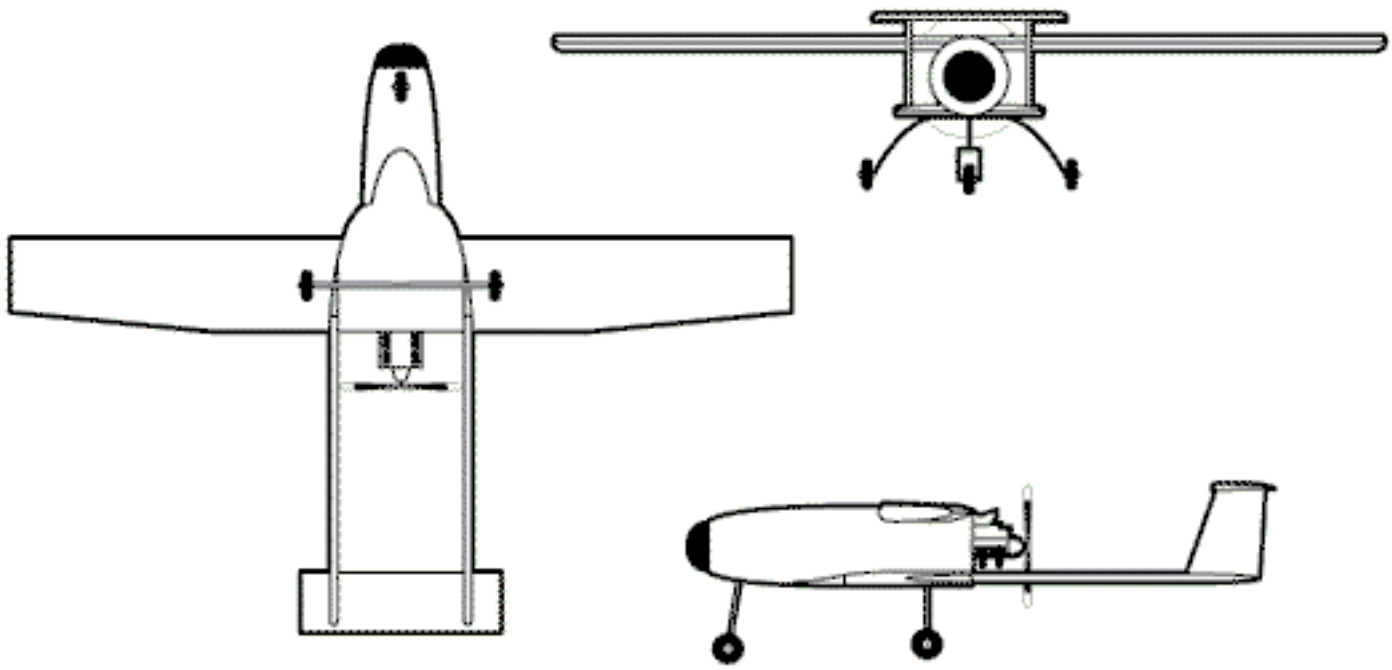
Wings. Low-mounted, back-tapered and semidelta with square tips.

Engine(s). Single jet on top rear. Oval intake and round exhaust.
Fuselage. Round, tapered to the front and rear. Two belly fins.
Tail. Back-tapered, V-type flats on sides of engine. Tail cone.

USER COUNTRIES

Argentina (MQ-2 Bigua), Greece, Iraq, Italy, Libya.

MK-105 FLASH (IAT)



GENERAL DATA

Country of Origin. France, Germany, USA, UK.
Similar Aerial Platform. Mirach 26, Shaheen, MK III, Mastiff, Ranger ADS 90.
Role. Short-range multirole UAV.
Armament. Usually none.
Dimensions: Length: 10 ft, 9 in (3.34 m). Span: 14 ft, 4 in (4.40 m).

WEFT DESCRIPTION

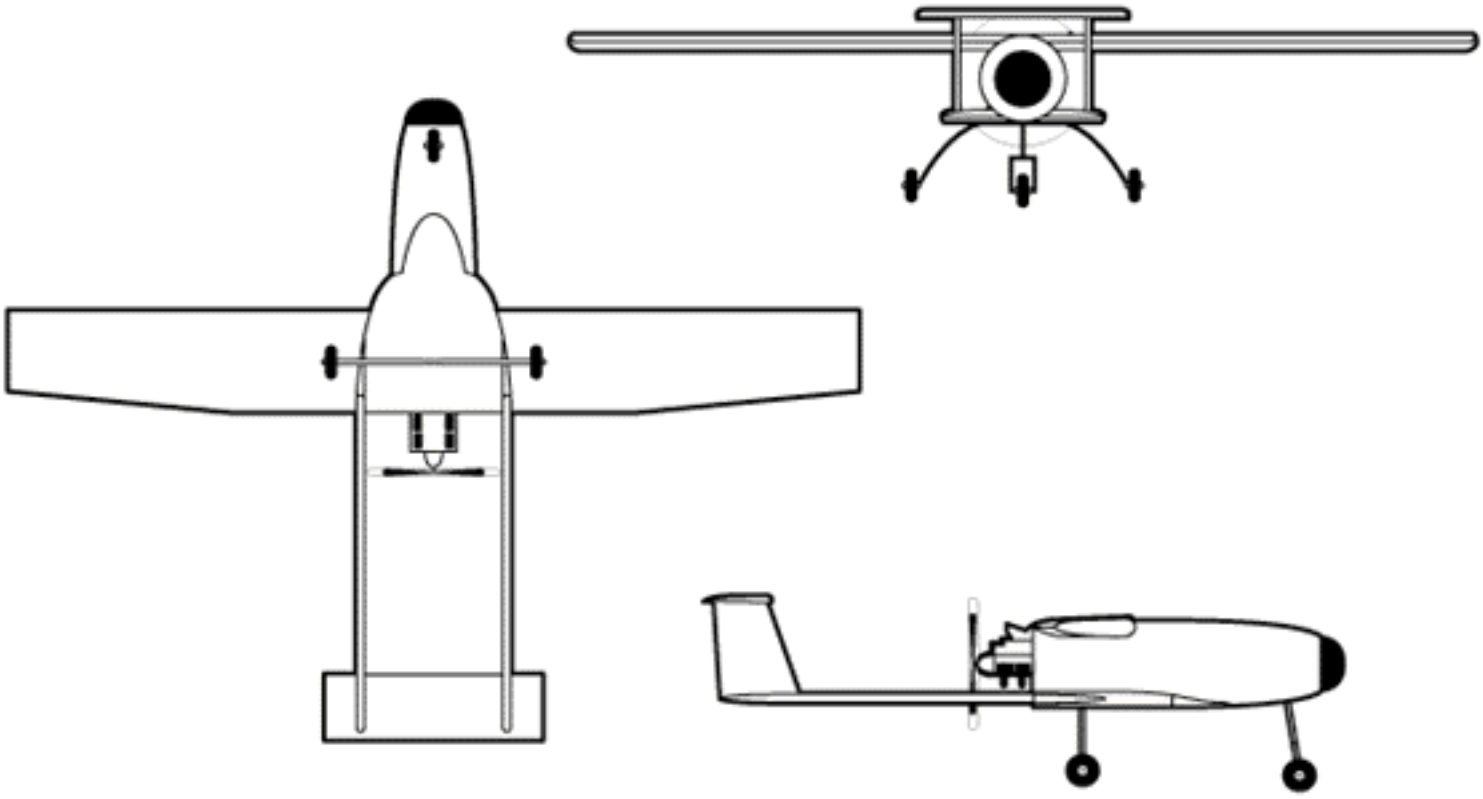
Wings. High-mounted and forward tapered from midwing to the square tips.

Engine(s). Four-cylinder, prop driven on rear of fuselage in the opposing position.
Fuselage. Round with round, glass nose. IR bubble sensor on belly. Thin booms.
Tail. Back-tapered fins on booms. Square flat on top of fins.

USER COUNTRIES

France, Germany,

MK-106 HIT (IAT)



GENERAL DATA

Country of Origin. France, Germany, USA, UK.
Similar Aerial Platform. Harry, Donier DAR, Raki, AW-10.
Role. Multirole, reconnaissance/targeting.
Armament. None.
Dimensions. Length: 6 ft, 5 in (2 m). Span: 6 ft, 8 in (2.1 m).

WEFT DESCRIPTION

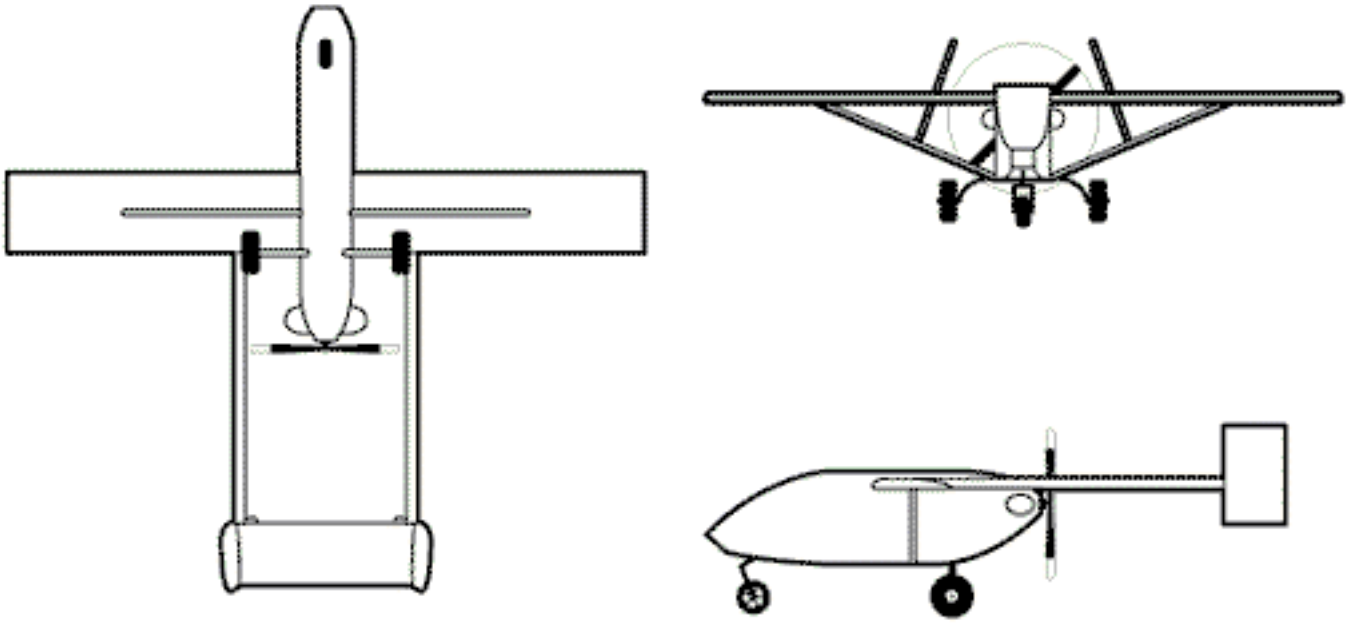
Wings. Mid-mounted and semidelta with square tips. Winglets at tips. Large semidelta canards mounted

high at the nose section.
Engine(s). Four-cylinder, prop-driven and mounted in the rear in opposing position.
Fuselage. Round, tapering to the round nose. Launch fairing on belly.
Tail. No fins or flats.

USER COUNTRIES

France, Germany, USA, UK.

PIONEER (AAI, IAI)



GENERAL DATA

Country of Origin. Israel, USA.
Similar Aerial Platforms. Scout, Hunter, Scout II.
Role. Short and medium-range surveillance and reconnaissance.
Armament. None.
Dimensions. Length: 13 ft, 9 in (4.26 m). Span: 16 ft, 7 in (5.11 m).

WEFT DESCRIPTION

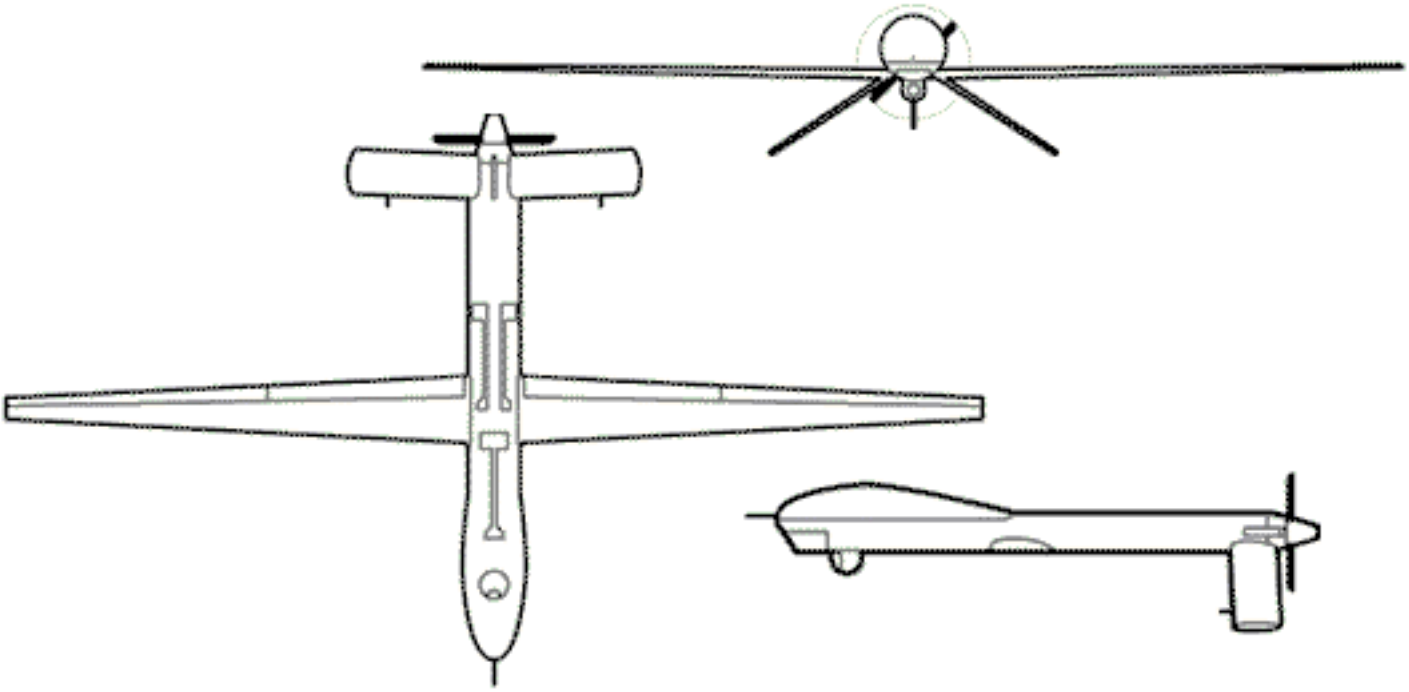
Wings. High-mounted and straight with square tips. Struts on wings attached to body.

Engine(s). Single, prop-driven and mounted in fuselage rear in the opposing position.
Fuselage. Oval, slab-sided, tapers to a pointed nose and rear. Fixed landing gear.
Tail. Booms mounted to square fins which extend above and below a straight flat.

USER COUNTRIES

Israel, USA.

PREDATOR (GAAS)



GENERAL DATA

Country of Origin. USA.
Similar Aerial Platform. D-4 NPU.
Role. Reconnaissance, targeting.
Armament. None.
Dimensions. Length: 26 ft, 6 in (8.12 m). Span: 41 ft, 7 in (12.71 m).

WEFT DESCRIPTION

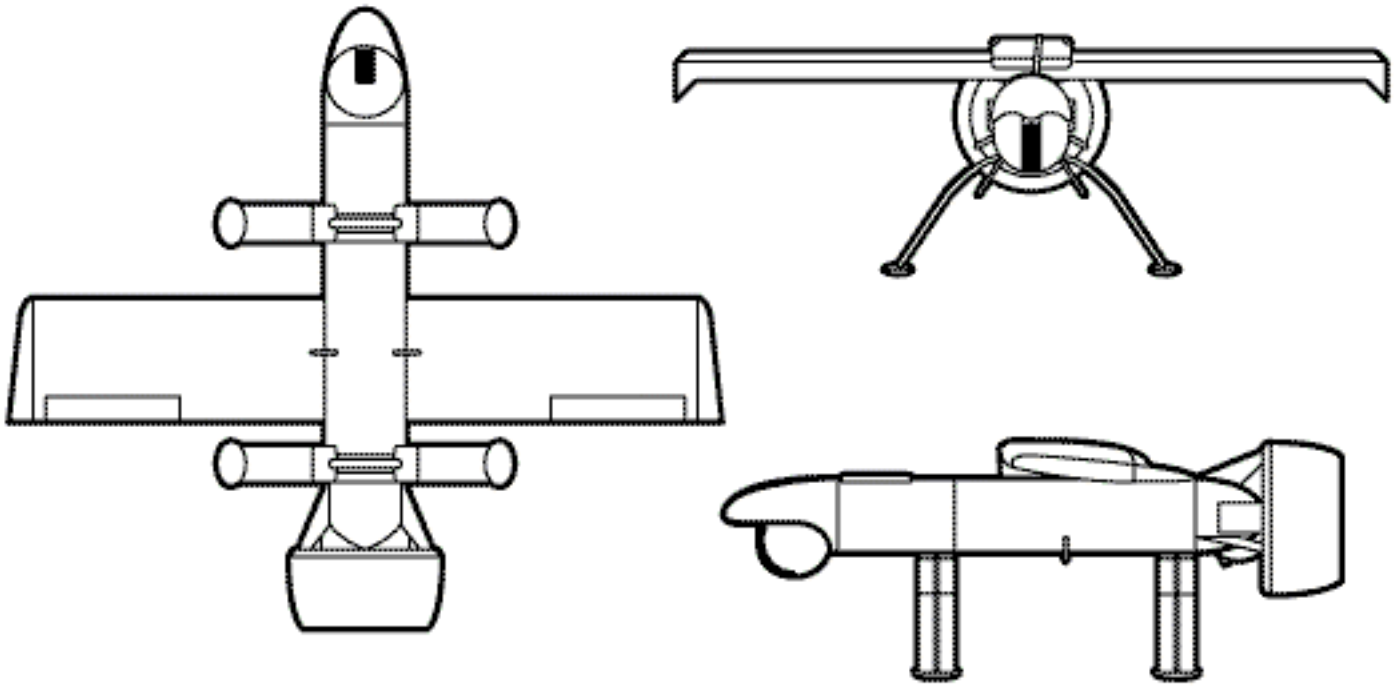
Wings. Low-mounted and sharply-tapered with a slight positive slant.

Engine(s). Single, prop-driven and mounted on rear in the opposing position.
Fuselage. Round, tubular. Bulging at the front one-third.
Tail. Low-mounted rectangular flats and sharp negative slant. No fin.

USER COUNTRIES

USA.

SHMEL-1 Yak-061 (YAKOVLEV)



GENERAL DATA

Country of Origin. CIS.
Similar Aerial Platform. None.
Role. Remote terrain observation.
Armament. None.
Dimensions. Length: 9 ft, 1 in (2.78 m). Span: 10 ft, 6 in (3.25 m).

WEFT DESCRIPTION

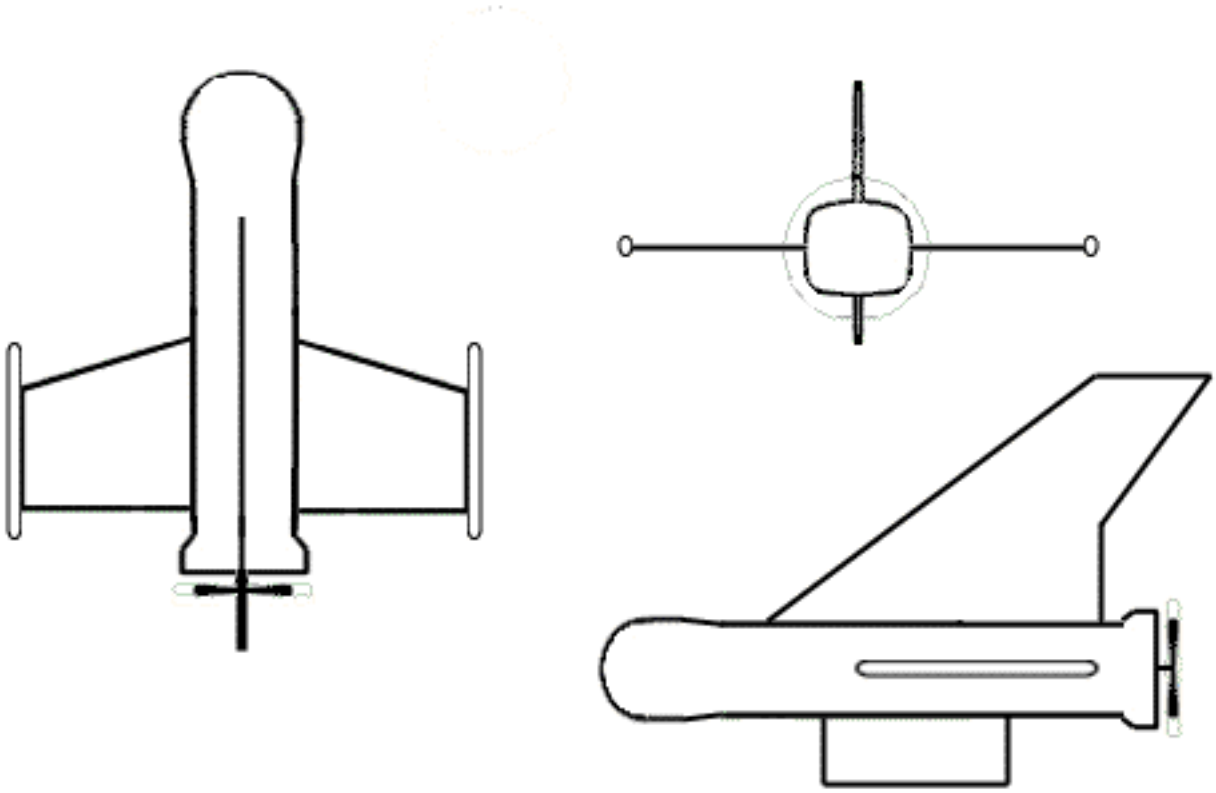
Wings. High-mounted and straight with blunt, negative slanted tips.

Engine(s). Prop-engine and has a round enclosure at the rear in the opposing position.
Fuselage. Rounded, bullet nose. Pads on feet of four curved legs for landing.
Tail. Three swept-back stabilizers on rear of craft forming the engine housing.

USER COUNTRIES

CIS, Syria.

TAIFUN (SYSTEMTECHNIK NORD)



GENERAL DATA

Country of Origin. Germany.
Similar Aerial Platform. Brevel.
Crew. None.
Role. Anti-armor drone.
Armament. Shaped charge.
Dimensions. Length: 5 ft 9 in (1.8 m). Span: 7 ft 5 in (2.3 m).

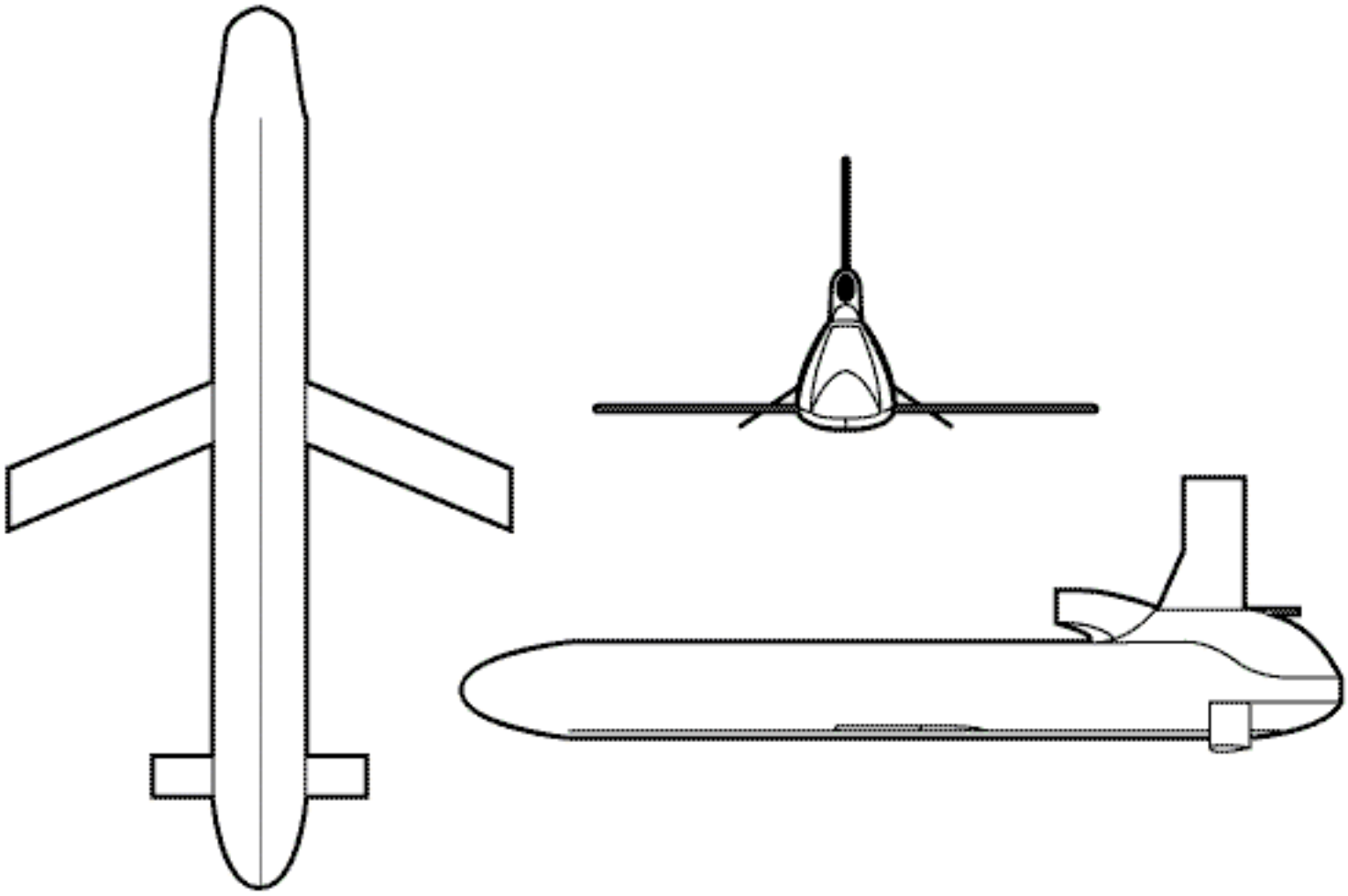
WEFT DESCRIPTION

Wings. X-section. Mid-mounted, back-tapered with square tips.
Engine(s). Two cylinder, piston engine with prop mounted in the opposing position.
Fuselage. Round, cylinder-shape with bulbous nose and blunt rear.
Tail. Back-tapered top and belly fin with square tips and sensor pods.

USER COUNTRY

Germany.

TOMAHAWK AGM-86 (BOEING AEROSPACE)



GENERAL DATA

Country of Origin. USA.
Similar Aerial Platforms. Apache.
Role. Air-launched cruise missile.
Armament. Nuclear or HE warhead.
Dimensions. Length: 20 ft, 7 in (6.32 m). Span: 11 ft, 9 in (3.65 m).

WEFT DESCRIPTION

Wings. Low-mounted, swept-back, and untapered with small, square tips.

Engine(s). Turbofan in aft section. Oval intake and a round exhaust. May have propfan.
Fuselage. Slabsided with flat bottom. Tapers to a round nose and at rear section.
Tail. Fin backtapered with square tip. Flats low-mounted and straight. Some versions have V-tail.

USER COUNTRY

USA.

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APPENDIX

MASTER AIRCRAFT LIST

GROUND-ATTACK, CLOSE AIR SUPPORT, AND FIGHTER-BOMBER AIRCRAFT

A-4 Skyhawk	F-104 Starfighter	MiG-27 Flogger D,J
A-6 Intruder	F-111 Aardvark	MiG-29 Fulcrum
A-7 Corsair II	F-117A Night Hawk	Mirage III/5
A-10A Thunderbolt II	Fantan A, Q-5	Mirage F1
A-37 Dragonfly	G.91Y	SF.260W
Alpha Jet	Galeb/Jastreb	Su-7B Fitter A
AMX	Hawk	Su-17,-20,-22 Fitter
AV-8B Harrier II	Jaguar	Su-24 Fencer
Buccaneer	Kfir	Su-25 Frogfoot
Draken	L-39 Albatross	Super Etendard
F-1	Magister CM.170	Tornado IDS
F-4 Phantom II	M.B. 326	Viggen AJ-37
F-5 Freedom Fighter/Tiger II	M.B. 339A	Yak-28 Brewer
F-16 Fighting Falcon	MiG-17 Fresco	Yak-38 Forger
F/A-18 Hornet	MiG-21 Fishbed	.

AIR SUPERIORITY AND INTERCEPTOR AIRCRAFT

F-14 Tomcat	MiG-25 Foxbat	Su-15 Flagon
F-15 Eagle	MiG-31 Foxhound	Su-27 Flanker
MiG-19 Farmer	Mirage 2000	Tornado ADV
MiG-23 Flogger B	.	.

BOMBER AIRCRAFT

B-1B Lancer	Il-28 Beagle	Tu-26 Backfire
B-2	Tu-16 Badger	Tu-95 Bear
B-52 Stratofortress	Tu-22 Blinder	Tu-160 Blackjack
Canberra	.	.

CARGO AND TRANSPORT AIRCRAFT

An-12 Cub	Buffalo, C-8A	C-141B Starlifter
An-24 Coke, An-26 Curl	C-5 Galaxy	C-160 Transall
An-32 Cline	Caribou, C-7A	DC-3 Dakota
An-72 Coaler	C-17A Globemaster III	G.222
An-124 Condor	C-123 Provider	Il-14 Crate
Aviocar C-212	C-130 Hercules	Il-76 Candid

UTILITY AIRCRAFT

An-2 Colt	O-2 Skymaster	Skyvan 3M
C-12 Super King Air, B200	OV-10 Bronco	U-6A Beaver
C-23A Sherpa	Skyservant	U-8F Seminole, Queen Air
King Air	PC-7	UV-18A Twin Otter
O-1 Bird Dog	.	.

HELICOPTER AIRCRAFT

AH-1F Cobra	Gazelle	Mi-28 Havoc
AH-1W Super Cobra	Hirundo A109	OH-6A Cayuse
AH-64 Apache	Ka-50 Hokum	OH-13 Sioux
Alouette II	Lynx	OH-58D Kiowa
Alouette III	Mangusta A129	Puma
BO 105	Mi-1 Hare	Scout, Wasp
CH-3/HH-3E Jolly Green Giant	Mi-2 Hoplite	SH-3 Sea King
CH-46 Sea Knight	Mi-4 Hound	Super Frelon
CH-47 Chinook	Mi-6 Hook	UH-1 Iroquois
CH-53 Sea Stallion	Mi-8 Hip	UH-1N Model 212
Dauphin 2	Mi-24 Hind	UH-60A Black Hawk
Defender 500	Mi-26 Halo	.

EARLY WARNING, OBSERVATION, AND RECONNAISSANCE AIRCRAFT

A-50 Mainstay	EF-111A Raven	P-3C Orion
E-2C Hawkeye	Il-20 Coot-A	S-2 Tracker
E-3A Sentry	Nimrod AEW3	S-3A Viking
EA-6B Prowler	OV-1 Mohawk	.

UNMANNED AERIAL VEHICLES AND CRUISE MISSILES

Apache CWS	D-4 NPU	Pioneer
AS-4 Kitchen	DR-3 Reys	Predator
AS-15 Kent	Model 324	Raven
Banshee BTT-3	Model 410	Scout
Brevel	Mirach 26	Shmel-1 Yak-061

BQM-34 Firebee II	Mirach 100	Taifun
C-101	MK-105 Flash	Tomahawk AGM-86
Crecerelle	MK-106 HIT	.

GLOSSARY

AAI	AAI Corporation
AAM	air-to-air missile
AEW	airborne early warning
AGM	air-to-ground missile
aileron	aircraft roll control
ALCM	air-launched cruise missile
altitude	height above sea level
ART-V	aircraft recognition training-visual 35-millimeter slide kit
ASM	air-to-surface missile
aspect	aircraft appearance with respect to a ground observer
assault gunship	rotary- and fixed-wing aircraft, armed and equipped to carry combat troops into battle and operating from land or sea
ASW	antisubmarine warfare
ATF	advanced tactical fighter
ATGM	antitank guided missile

ATOLL AA-2-2 air-to-air missile, CIS (former USSR)

attitude inclination of aircraft in relation to the ground (heading, pitch, and roll)

Avenger 30-millimeter cannon on A-10A Thunderbolt II. FAAD weapon system

AWACS Airborne Warning and Control System

BAe British Aerospace (aircraft manufacturer)

butterfly tail rounded tail fin and flats of a particular aircraft type (O-1 Bird Dog)

cabin housing on an aircraft for troops or cargo

CAI computer aided instruction

canards winglets, controllable or fixed, located forward of the center of gravity

canopy cover for cockpit

CAS close air support

CASA Construcciones Aeronauticas SA

CBU cluster bomb unit

CD compact disc

chord straight line joining the leading and trailing edges of an airfoil section

CIS Commonwealth of Independent States (formerly USSR)

clean aircraft in flight with landing gear, flaps, slats retracted, and or without

external stores

cluttered aircraft with external stores (bombs, missiles, and fuel tanks)

cockpit housing for crew and aircraft instrumentation

COIN (co-in) counterinsurgency

detection (DOD) in tactical operations, the perception of an object of possible military interest, but unconfirmed by recognition. (NATO) the discovery by any means the presence of a person or object of potential military significance.

DHC DeHavilland Canada (aircraft manufacturer)

dihedral upward or positive slope of the wings or tail flats (anhedral is the downward or negative slope)

DOD Department of Defense

dogtooth horizontal step in the leading edge of the wing resulting from an increase in chord

dorsal spine fairing along the back of an aircraft, usually housing avionic equipment

drone pilotless aircraft (remotely controlled)

ECM electronic countermeasures

elevator a hinged, horizontal surface that controls the pitch of an aircraft

ELINT electronic intelligence

EMB Embraer (aircraft manufacturer)

Exocet French-built air-to-surface missile (antiship)

FAAD forward area air defense

fairing streamlined covering (also curvature in spine connected to the tail fin)

fence projection parallel to the wing chord that modifies the distribution of pressure

ferry range maximum range without payload

fin vertical stabilizer

flap movable surface that increases the lift or drag of an aircraft

flat horizontal stabilizer

FLIR forward looking infrared

fuselage body of an aircraft

GCS ground control station

glove located at the pivots on variable-geometry aircraft. It is impossible to have one-piece pivotal aircraft because at zero sweep, the inner ends would overlap (the solution to this problem is a fixed inner wing called a glove).

GOAR ground observation aircraft recognition (an obsolete 35-millimeter slide kit superseded by ART-V)

Grail CIS-built built SA-7, man-portable antiaircraft missile

gunship generally a helicopter that was designed for battlefield attack.

Also some fixed-wing aircraft are designated gunships (AC-47, AC-119, and AC-130).

hardpoint reinforced stations to which external stores can be attached. Pylon is another term.

HARM US-built AGM 88A high-speed antiradiation missile used against air defenses.

Hellfire helicopter-launched fire and forget. The missile is also fired from some attack fixed-wing aircraft (A-10A Thunderbolt II).

HOT air-to-ground antitank missile, also called Euromissile Hot. Full name is "hautsubsonique optiquement teleguide tire d'un tube".

IAI Israel Aircraft Industries (aircraft manufacturer)

IAT International Aerospace Technology

identification (DOD/IADB) the process of determining the friendly or hostile character of an unknown detected contact. In ground combat operations, discrimination between recognizable objects as being friendly or enemy, or the name that belongs to the object as a member of a class. (NATO) In imagery interpretation, the discrimination between objects within a particular type or class

IFF identification, friend or foe (generally electronic)

incidence angle at which a wing is set in relation to the fuselage axis

IR infrared

KMPH	kilometers per hour
knot	one nautical mile (1.152 land miles per hour)
loiter	flight endurance
LEX	leading edge extension
LERX	leading edge root extension
Mach	speed of sound. One Mach=1,116 feet per second at sea level
maritime	actions performed by forces over, under, or on the seas
Maverick	US-built AGM-65 air-to-surface missile
MBB	Messerschmitt-Bolkow-Blohm (aircraft manufacturer)
mission	primary task
mm	millimeter
MPCS	mission planning and control station
MPH	miles per hour
nacelle	enclosed engine housing (also an enclosed passenger cabin like the C-119)
NATO	North Atlantic Treaty Organization
NOE	nap-of-the-earth (flying low, using natural cover)
NOGS	night observation gunsight
NOS	night observation surveillance
open lattice	uncovered tail boom with visible framework

ordnance aircraft weapons load

Phoenix US-built AIM-54 air-to-air missile

PNVS pilot's night vision sensor

port left side looking forward

pylon structure that links aircraft to loads, drop-tank, bombs, and engines

PZL Panstwowe Zaklady Lotniczc (state aviation works) at the cities of Mielec and Swidnik in Poland

QSTAG Quadripartite Standardization Agreement

radius the distance an aircraft can fly and return including standoff and loiter

RAF Royal Air Force

RAM Ramenskoye Flight Test Center in the former USSR

range performance characteristic expressed as total distance

recognition (DOD/IADB) the determination by any means of the individuality of objects such as aircraft. In ground operations, the determination that an object is similar within a category of something, for example, aircraft (helicopter, fixed wing jet, cargo, etcetera). (NATO) the determination of the nature or a detected person, object, or phenomenon, and possibly its class or type. This may include the determination of a individual within a particular class or type.

RISTA reconnaissance, intelligence, surveillance, targeting and acquisition

RN Royal Navy

role function, such as a fighter-bomber

RPV remotely piloted vehicle

SAAB SAAB-Scania

sawtooth a step in the leading edge of an aircraft wing

SEAD suppression of enemy air defenses

service ceiling operational height above sea level

Shadow AC-119 Flying Boxcar gunship

Shrike US-built AGM-5 air-to-surface antiradiation missile

Sidewinder US-built AIM-9 -series air-to-air missile

signature smoke, infrared, or radar fingerprints

SL sea level

SLAR side-looking airborne radar

Sparrow US-built AIM-7 air-to-air missile

Spectre AC-130 Hercules gunship

Spooky AC-47 Skytrain gunship

SRAM short-range attack missile

stabilizer part of the tail assembly (horizontal flats and vertical fin(s))

starboard right side looking forward

Stealth low-visibility aircraft with little or no radar signature

STOL short takeoff and landing

store payload

strake small stabilizer on aircraft surface (Kfir nose section)

strategic bomber aircraft designed primarily for long-range bombing or missile attack

strategic transport aircraft designed primarily for the transport of cargo or personnel over long distances

threat aircraft bearing the military markings and or having the configuration of an aircraft employed by a known hostile nation, or meeting the criteria as prescribed by policy

swept-back backwards inclination of the wing or tail plane, measured relative to the fuselage by the wing or tail plane center line

subsonic a speed less than the speed of sound

supersonic a speed in excess of the speed of sound

tactical air ops USAF term air operations involving the six combat functions of counterair, close air support, air interdiction, air reconnaissance, airlift, and special operations

TADS target acquisition and designation sight

tail plane horizontal stabilizer-tail flat

taper	diminishing width from base to the tip
TEC	training extension course
turbofan	gas-turbine engine with a large diameter cowled fan
turbojet	simple gas turbine with compressor, combustion chamber, turbine, and propulsive nozzle
turboshaft	as turbine where energy is transferred from gas jet to drive a high-speed shaft and helicopter blade
UAV	unmanned aerial vehicle
UK	United Kingdom
USSR	former Union of Soviet Socialist Republics restructured to Commonwealth of Independent States (CIS)
VACR	visual aircraft recognition
variable geometry	movable wings
ventral fin	stabilizing surface attached to the undersurface of an aircraft, commonly called a belly fin
VSTOL	vertical short takeoff and landing
WEFT	wings, engine(s), fuselage, tail. Method used to learn aircraft's major parts for recognition training
Wild Weasel	an aircraft specifically modified to identify, locate, and physically destroy or suppress enemy ground-based air defense systems

REFERENCES

SOURCES USED

These are the sources quoted or paraphased in this publication.
ACCP IS4400. Visual Aircraft Recognition. 1 April 1995.
DA Form 2028. Recommended Changes to Publications and Blank Forms. February 1974.
QSTAG 699. Aircraft Recognition Training. 20 January 1984.

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.
GTA 44-2-17. Combat Aircraft - CAS, Fighter-bomber and Air Superiority. January 1996.
GTA 44-2-18. Combat Aircraft - Helicopter. January 1996.
GTA 44-2-19. Combat Aircraft - UAV, Bomber and Cargo. January 1996.

READINGS RECOMMENDED

These readings contain relevant supplemental information.
(O) JCS Pub 3-01.3. Joint Doctrine for Air Defense From Oversea Land Areas. 23 May 1964.

By Order of the Secretaries of the Army and the Air Force:

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